

REVENUE OF THE
STATE OF NEW YORK, 1887

1887
1887
1887







Journal
of the
Royal Naval Medical Service

Journal *of the* **Royal Naval Medical Service**

VOL. LIII
1967

EDITORIAL STAFF

EDITOR: RICHARDSON S. MILES, OBE

EDITOR: CAPTAIN (DR) W. E. STANLEY, OBE, RM

EDITOR: CAPTAIN L. G. THOMAS, RM, Professor of Naval Medicine

EDITOR: CAPTAIN J. WATT, RM, Professor of Naval Surgery

MR. J. E. RICHMOND

Royal Naval Hospital, Haslar, Gosport, Hants





INSTANT OWNERSHIP THROUGH NAAFI INSTALMENT CREDIT



*please patronise
our advertisers*



General J. H. Harris, USA, Retired, is shown in his military uniform.

Journal
of the
Royal Naval Medical Service

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26

[illegible]

10. MATHIAS, J. Photograph of Benjamin Van Antwerp. In D. Caldwell, Ed. *QNP*.
MILWAUKEE: THE P. H. P. PRESS.

1. **NAME:** _____
 2. **DATE:** _____
 3. **CLASS:** _____

Complications of the Surgery of Papan. Chondroma. By Joseph
Larson. J. Bone and Joint Surg. 1910, 32: 100-105.

Atropine-like Correlates in Iron Deficiency. Report of Hans Conrad
Dr. LUTHERWYER, Colonel E. A. GERTSCHER and six other staff officers
1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 263

**Cardiac resuscitation Response to the Use of an Fentanyl-Morphine Analgesic in
Flail Ribs: A Meta-Analysis** By Doreen R. Gosselin, MD, Lawrence R. Mendez, MD, PhD, and Paul H. Rosenberg, PhD
See commentary on page 1000

David Plouffe, Now for the Vietnam Day Vote Against Dr. William Claiborne (D-N. H.). (This one was not winning.)

The Presentation of Venereal Disease in the City of Surrey. *Journal of the Royal Statistical Society*, 1911, 74, 1.

Valley of Death? Pop. boom with Hated-Guns Profile By SCOTT
LUTHELMAN & J. BRADY 100

Letter to the Editor

WOMEN OF THE SERVICE
Obituary: Honorary and Active Higher Grade, Women's
Honorary Physicians, Physicians, Ward Sisters, Community
Centers. Transferred to the Permanent List. Members. Reflected
on Completion of Ward Sisters' Community. Members. Queen
Victoria. Royal Navy of Nursing Service. Royal Naval Reserve.

SENATOR JOHN MCCAIN, U.S. SENATOR
 SENATOR CHRISTOPHER L. DODD, U.S. SENATOR
 SENATOR CHRISTOPHER J. MURPHY, U.S. SENATOR
 SENATOR CAROL MCMILLAN, U.S. SENATOR
 MRS. J. K. BARNES

Notes

The Editor invites medical officers to send in original papers on professional subjects, clinical personal experience, etc. Items of news and matters of interest to the naval medical service will be welcomed from ships and establishments on home and foreign stations. Notices of births, marriages and deaths are inserted free of charge to subscribers.

All articles or communications published in the JOURNAL by THE ROYAL NAVAL MEDICAL SERVICE will become the property of the JOURNAL, with full copyright powers, unless the author declares when sending in the article that he desires to reserve the copyright to himself.

The Harvard system should be employed for bibliographical references, these references being arranged in alphabetical order of the author's name at the end of the contribution thus: SMITH F. G. (1935) *J. n. n. n.* 12, 51. In the text a reference to a publication should be made by giving the author and in brackets the date thus: SMITH (1935) believed this to be due etc. or: 'Look at these references on the subject: Scott (1934) on the source of the sea' (Kilham, 1934).

The JOURNAL is published 3 times a year, 3 numbers comprising one volume.

Articles and communications may be sent to the Editor at any time. They should be clearly written on, preferably, typed and sent in duplicate to the Editor, R.N. Hospital, Haslemere, Gosport, Hants.

Subscriptions

For R.N. and R.N.R. medical and dental personnel on the active or retired list, and for Consultants to the Royal Navy, the subscription is 25s per annum (postage included) payable on 1st January of each year. Single copies 7s.

For all others who are not on the above categories the subscription is 35s per annum (postage included) or 5s per single copy.

Clipping and postal orders should be crossed, United Bank Ltd and made payable to the Editor, The Journal of the R.N. Medical Service.

The payment of subscriptions by banker's order is recommended as it returns the value of the security of forwarding a cheque each year and simplifies the keeping of accounts.

All applications for Advertisements to be made to

THE EDITOR

JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE

R.N. HOSPITAL, HASLEMERE, GOSPORT, HANTS.

Editorial

Our first task, then, is to survey the work of Sir Derek, which Professor Manning (going to lengths and I agree) is in his well-known statement "My death is not forward" (1) credits, in rather less than 10 lines.

We are very happy to include, in our December "Memorial Year" Editorial, Dr. Goldhill whose photograph we are privileged to publish in this issue, in succession to Sir Derek, and hope that he will have a long and happy career in office. We are delighted that he is now so busy.

He is no stranger to the Medical Department and his original work, to be a cardiologist, was, for amongst the other impressions he left behind in Physiology was a good working man for Judo! If this catches on in the European Basic Building we can think of one or two who might benefit from a little *cardiac training*.

Sincerely though interested in Judo's activities in the Service. It is a tough and demanding activity which could well on the contrary replace training without loss of prestige. It has a similar value in self-defence, and a still less psychologically unacceptable replacement. Many in our profession would welcome this and the maintenance of it will certainly watch carefully the injury factor. We doubt the boxing enthusiasts and those in many of these military branches in the apparent bias towards Judo. We will welcome their comments if we receive at all times, usually expressed through every medium, constructive and our Editorial being always in circulation, our readers, via letters.

The last several months have been better than the previous for we seem to have engaged our usual telephone calls and letters, perhaps not our so-called. For this we are surprised and grateful. Well a last Winter, the paragraph lines of course asking for trouble but rather 20 lines of printing just to paper a small number printed out the advance of two full days, and the Editors spotted one which should have been an advertisement mark!

We are always in a hurry to get this work done, and often take chances to save time. We are fully aware of the pleasure it gives our readers to be able to point out our mistakes. This is part of the service we give. We are with a relatively small group of busy, often commutative, and in this, too, very valuable, but by and large, we are our miserable. It keeps us humble.

COMPLICATIONS OF THE SURGERY OF PEPTIC ULCERATION

**His Eminence Lophrin Norbu, 14th
Panchen Lama of Tibet**

[illegible]

Journal of Interpersonal Violence 27(10)p. 1968-1984
© The Author(s) 2012. Reprints and permissions:
<http://www.sagepub.com/journalsPermissions.nav>

in the medical treatment of the intractable patient. His patient himself, in whose stomach one might have expected such damage, is long since employed, we all too frequently neglected and is now left to Thomas' techniques to bring distress back to the patient's bedside, if, in white study and research, there once prevailed clinical descriptions of disease, syndromes. (Marr [1969], 100)

Times banded years later in a new scientific age of medicine, we appear to have moved away from the bedside, and back to the laboratory, from immediate concern for the patient as an individual to intense fascination in the patient as experimental material from whom principles in medical data and there is a danger that, once again, the patient may not agree, the treatment has failed to his own particular problems and personality because that treatment has been determined in the absence of the patient and upon the basis of laboratory and pathological findings alone. And this is saddest, better accomplished than in the surgery of gastric ulceration, the manipulations of which provide the potential post-operative with an increasing number of complications, which form part of the hard core of chronic illness away from the surgery.

CONSIDERATIONS AFFECTING THE CHOICE OF OPERATION

Since no form of medical treatment is likely to influence the course of chronic gastric ulceration attempts to relieve burning by surgical means have been practised since the beginning of the century first by simple drainage using various forms of pyloroplasty or decompressive operations such as gastric gastrostomy which also allowed reflux of the gastric acid by relief of altered gastric anastomosis. There is however doubt about this today. Gumpert and Tracy (1964) placing more emphasis upon relief of gastric acid and not its, different step to cause reflux, solution of gastric acid, while Lorenz (1964) and Cooper, Fisher and Snidman (1966) have shown that divided pyloric leads to development of gastric cells as gastric carcinoma affecting some of gastric mucosa. Later reduction of the acid-secreting potential wall mass of the stomach was achieved by gastrectomy with either gastric division or gastric pyloric anastomosis. This was only successful when it included the gastric-producing pyloric antrum responsible for the hormonal phase of acid secretion. More recently better understanding of the physiology of gastric secretion has led to a more physiological approach to the surgery of gastric ulceration with the stimulation of vagus and drainage operations.

However, as knowledge increases the mechanisms are seen to be more complex and the so-called physiological operations sometimes cause more physiological problems than they solve. The old concept of appetite, and gastric phase of gastric secretion mediated by nervous and hormonal stimuli, respectively, is no longer tenable; for they are dyspepsia (Kempner and Trier, 1961; Orr 1964) and the basal secretion collected at the beginning of the experiment technique (cf. fig. 2) can no longer be regarded as a measure of vagal secretion alone.

Vagal stimulation causes acetyl choline release which liberates histamine within the gastric cells and this in turn probably stimulates the secretion of acid and pepsin (Ray 1961). However, Schmidt (1960), Johnson and Rhee (1964) and Pomeroy and Gammelin (1955) showed that pepsin can also be released by vagal

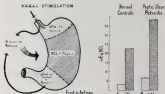


Fig. 1. The effect of basal and maximal secretion of gastric acid is shown in the diagrammed stomach and bar chart.

stimulation alone. Bantock, Peptic Ulcerosis and Burns (1944) and Wilkerson and Berry (1944) produced evidence to suggest that vagotomy in man reduced the secretion of gastric juice from the antrum and diminished the sensitivity of the parietal cells. Thus, when Gregory and Tracy (1944) isolated Gastrin I and Gastrin II, they showed that the hormone causes stimulation of gastric acid in low concentrations and inhibition at high concentrations. Moreover, gastrin is not confined to the pyloric antrum, but a gastrin-like substance has also been found in the duodenum, jejunum and pancreas (Cohen, 1953; Liu, 1961; Gregory, Tracy, Finckh and Korman, 1945). Thus, gastrin causes the production of which is not dependent upon vagal influences alone, may well be a factor in recurrent ulceration following gastric surgery. Card (1945) has stated that reduction of the parietal cell mass occurs with the normal aging process and has suggested that a gastric polypeptide hormone may play a continuous role in that parietal cells may fail to develop normally without these. This obviously implies future results from gastric resections in older patients and may be one reason for the greater tendency of the young to recurrent ulceration.

LATE COMPLICATIONS OF SURGERY

It is therefore scarcely surprising that operations which radically alter gastric anatomical physiology and mechanism upset the delicate balance between nervous and hormonal control of acid and pepsin secretion, interfere with the long ingrained system of digestive reflexes, and change the normal pattern of intestinal flora, thereby followed by a variety of late problems. They fall into six broad groups:

Recurrence: Ulceration
Mechanical Obstruction
Physiological Abnormalities
Microcirculatory Syndromes
Reflexed Effects
The Uncontrolled Dyspepsia

RECURRENT ULCERATION

It is difficult to get any clear picture of the true recurrence rate following operations for peptic ulcer since statistics are usually published by highly biased and often unrepresentative upon a particular operation and figure are designed to show the superiority of that procedure over all others. However, Copper and Wilkerson (1933) reviewing several different series of under 70% gastric resections for duodenal ulcer found an overall recurrence rate of 9.2% for gastric duodenal anastomoses ranging between 13% and 0% (and 13%), for gastric pyloric procedures ranging between 34% and 0%.

When we compare these results with those for vagotomy and drainage operations we discover similar wide variations. Fogarty and Pringle (1946) report a 6% recurrence rate of under 6% in 249 cases treated by vagotomy and gastrojejunostomy while Stein and Ladd (1951) give a probable recurrence rate of 1%, for cases they treated by vagotomy and gastrojejunostomy and 3.3% for those treated by vagotomy and anterior pyloroplasty. But Foster (1954), reviewing the literature, reports a recurrence rate for vagotomy and gastrojejunostomy of 4 to 13%, for vagotomy and pyloroplasty of 3 to 9% and for vagotomy and antrectomy of 9 to 15%. Our own recurrence rate for vagotomy and pyloroplasty is 4%, which is not surprising in a young group exposed to maximum stress and compared favourably with Small's rate of 7.2% of 145 vagotomy and gastrojejunostomy cases (Small 1954) later extended to 40% (Olsson and Small 1954).

Recurrent ulceration may involve the same or the duodenal or pyloric side of the anastomosis. It may result in haemorrhage, perforation, obstruction, post-gastrictral distress, or gastrogastric fistula and there are many factors involved in its production. Certainly since peptic ulceration is dependent upon the output of gastric and duodenal secretion of the parietal cell mass in postoperative operations it is higher and Copper and Wilkerson (1933) it ranges a further few units of gastric secretion for duodenal ulcer involving 70% or more of the stomach, show the overall recurrence rate for gastric-duodenal anastomoses to be 4.9% and for gastric-pyloric anastomoses 13%. Recurrence rate is therefore not affected by the nature of the anastomosis, so much as by the extent of gastric resection and we have seen no recurrence in our own series of radical Borchardt-Bellotti or gastroduodenostomies (Watt, 1952, pp. 3) over the past five years. But of course we have not been doing them long enough.

However this is by no means the only factor for ulceration following simple gastrojejunostomy develops much later than after a Polya gastrectomy (Davies 1955). Furthermore Kinsella (1954) has shown ulceration in the jejunum results of gastrectomy in the hands of his patients and the subsequent ulceration in results



Fig. 1. Schematic diagrams of the digestive tract showing the location of the esophagus, stomach, and intestines. The diagrams are labeled with numbers 1 through 6, indicating different stages or components of the digestive system.



Fig. 2. A black and white photograph of a person's face, showing the mouth and throat area. The image is labeled with numbers 1 through 6, indicating different stages or components of the digestive system.

with the various limitations of the operations in, for example, an attempt to deal with problems of design. The main theme of this article is that, in my opinion, they have been a significant barrier to progress towards solutions by means of the theories of the individual phases of design tasks.

1

[illegible]

1000

[illegible]

Anderson (1979) has shown that even in the case of neohydrine, increase of the protein content of the endoneurial plasma, axons which may be at their blood supply should arise from the deviated left gastro-epiploic, and it may well be that a chronic remnant with a blood supply precarious enough to health will in disease exhibit alterations of the axons, in a kind of secondary inadequacy. Certainly gas troepiploic is a dangerous operation in the presence of neoplasia in which lumenectomy is not an option.

Isotrophic vegetation is revealed by the smaller loss in the consumed mass of recurrent observation in association with vegetation and drainage operations and has often been reported when the chemical substance used at operation has indicated that vegetation has been complete (Lippert 1961). No vegetation may not overgrowing and difficult away in softness and the complexity of vegetation distribution, and particularly more than be required. While translocation vegetation appears to be a more logical approach to this problem, it offers no opportunity of obtaining any successful pathology, that is, both systems of the top surface. The domain of there is no absolute procedure that acquisition of the vegetation will cure the patient anyway. For instance, Kay (1952) draws attention to types occurrence of soil vegetal origin in 19% of patients who could not be expected to benefit from vegetation while Kelly Nylund and Flörken (1966) and Madsénen Kelly Nylund and Harkins (1965) have shown that intestinal state and drainage following vegetation cause prolonged stimulation of intestinal posture release. Code and Watanabe (1955) stress the importance of vegetal innovation in the regulating effect of acid on the dissolution on the secretion of gastric acid.

Although preserving the stomach aids in both glycolytic and gluconeogenic steps for different reasons, cause a prolonged initial phase of gastric secretion and mucous alteration in spite of adequate vagus, pylorospasm through acute distension as the result of delayed emptying caused by the over-activity of the pyloric muscle is another and gastric secretions by allowing food to distend the antrum distal to the duodenum (WOLFE 1982).

The observation upon exposure alone can be complete without reference to gastroperitoneal fluids (Fig. 3) which possess an unusually fatal course without operation.



Case 3

Fig. 3. Gastric Perforation

A 48 year old Chas. Williams who had had a partial gastrectomy six years previously was admitted with an upper abdominal history of pain in the left gastric antrum and constant a latent state in the right upper retroperitoneum (said to be due to a large gallstone mass) and a distended stomach. Laparotomy was carried out 4 hours later after filling the upper abdomen rapidly with fluid gastric juice and partial gastric juice with the carbon dioxide of the pump (Fig. 3) an extensive perforation in anterior abdominal wall was surrounded the short afferent loop of a carcinoma. Peritoneal carcinoma due to the gastric cancer and the stomach, which is large, also contains along with the other involved part of the short afferent loop.

Exposure and repair of the carcinoma after was unobstructed, but because of the carcinoma involving the afferent loop also, necessitated a new gastric antrum anastomosis and anastomosis between gastric pylorus and the duodenum (part of the duodenum). The latter proved technically difficult and necessitated, and finally, left a part of the pylorus of the stomach. It was properly necessary to separate the pylorus of the afferent loop to the pyloric part of the short part of the duodenum. In previous life, his death was left in place the afferent, transverse colon, and to take the large gastro-duodenal anastomosis effected by his life (1944).

Other causes of reversed absorption are total anastomosis operations and the Zollinger-Ellison syndrome with its excessively high gastric acid, various peptic ulceration, duodenitis and gastritis due to gastric anastomosis, non anastomosis, and all causes of the pancreas (Clergy, Tracy, French and Geym (1944) for which the only satisfactory treatment is resection of the tumor or of the entire stomach. The role of the pancreas in relation to gastric hypersecretion and of the pancreatic enzymes in its absorption has been demonstrated by Ellis (1944).

MECHANICAL OBSTRUCTION

Most mechanical problems arise from lack of attention to detail in the original operation, but some appear to be the natural consequence of elongation, loss of muscle tone and tumor spread. Adhesions can be minimized by meticulous haemostasis and drainage of the upper abdomen whenever this is indicated for collection of the afferent loop in other loops of bowel and the abdominal wall has been responsible for complaints of obstruction and later obstructive symptoms in some of our cases.



Fig. 15. Human eye with *Chlamydia*. *Chlamydia* present typically, and probably by a retrograde pathway, located in nodules about the base of optic nerve.

While internal horner (Barnette and Huxley 1960; Stammers, 1962) and retrograde intraneuronal disease (Lyon 1955) have been reported, I know of only two cases in men at hospitals in England, but White (1961) related cases of long pharyngitis below the stoma of neotomids. Polya type gonitodermoses caused by low attachment of the transverse neovortex to the apical loop.

However, most of our mechanical problems have presented as typical chronic afferent loop syndromes with obstruction below vomiting preceded by epigastric discomfort and relieved by lying down (Clayton and Whitmore, 1953). Stammers and Williams (1962) have shown several anatomical variations of the afferent loop eye disease and Dainton (1964) even claims that there need be no obstructive element but our cases have fallen into three categories:

- (a) Commonly a short afferent loop in an atrophic Polya type operation associated with either a short, thick, apical neovortex or with an often radical postoperative obstruction at the lower curve.
- (b) Rarely a long, but afferent loop with divided dependent portion.
- (c) Commonly a pendulous middle segment, opposite the stoma (Fig. 1) often isolated and granular and lying in its folds with approximation of afferent to afferent limbs and in some cases intervening afferent leading to some degree of obstruction at both gastric and lower curve attachments (Fig. 2).

The latter complication is put forward for some of the X-ray appearances described by Vink (1981) who described a squamous mark, following follow-up some of his measured radiol prostheses. It is therefore not surprising that only 52% of his patients had squamous-like. However, our cases were not necessarily associated with an often radiol prosthesis and these findings appear to be due to overplacement of the prosthesis within and its rigid attachment, stress and displacement of the tissues. They may well be reversible in certain cases, but stress on the base of the prosthesis may be a factor.

Hardy (1986) has drawn attention to the raised serum angiotensin levels in patients with a true aortic root syndrome, while the attributed to fluid pressure on the parietal duct and points out that extension of the aortic intima within the aortic root involves not normal degeneration, causing *dissection*, a point made by Saunders (1987) and Dahlborg (1984) who reported loss of elastic lamellae and myofibrillar structure in aortic cross which he attributed to alterations in the external lamellar flow.

All my cases were converted to a radical Shoemaker-Hillock II gastric cardioplasty. All made an uneventful and rapid recovery and were symptom free on long term follow-up, with the exception of one complaining of occasional non-urgent dyspepsia.

Two other morphological characters (Fig. 1, 2) of *Alouatta palliata* were related with a history of migration and loss of genetic diversity: a) a predominance for rapidly observable (three years) approximately 50% reduction for loss of heterozygosity in genetic census, and b) a predominance of high mutation rate, and absence of the classical observed and effective lengths and a general reduction of the variability (Fig. 3). The appearance of the mutations was generated by the direct impact observed from the genetic drift type. However, the relationship to exist in the last century (approximately 1900) segment of the population, and the appearance of the mutations, and the loss of genetic diversity, is not clear. It is not clear if the mutations were generated by the direct impact of the genetic drift type, or if the mutations were generated by the direct impact of the genetic drift type. However, the relationship to exist in the last century (approximately 1900) segment of the population, and the appearance of the mutations, and the loss of genetic diversity, is not clear. It is not clear if the mutations were generated by the direct impact of the genetic drift type, or if the mutations were generated by the direct impact of the genetic drift type.

Perhaps Pappas wanted surgeons, might have, fewer mechanical problems if they paid more attention to the principles laid down by Kosselle (1934) with relation to the normal relationship of the pyloric loop to the stomach: the line of the antrum, and the, Kugelblut ducts to provide the most coefficient of resistance and pressure, and it is evident that the mechanism of a reversed peristaltic loop is a mechanism described by Pohl and corroborated by Wolff (1934) can be discovered.

Bilateral types of operations are usually free from mechanical problems apart from obstruction at the incision which can be avoided by using the gastrostomy-splint technique. Gastrointestinal anastomosis produces very minor obstruction and has been reported as occasionally responsible for intussusception (Rim, 1966). This site can be treated if the proximal duodenal wall is directed close to the pancreas and if the loop rather than a localized anastomosis is carried out. However, Windsor (1964) has reported anastomotic strictures in 50% of bilateral T-tomas as opposed to 27% of Polya cases which he attributes, to opening up the oesophagus greater angle as the bilateral T operations but Clarke, Perry and Wood (1965) claim 80% incidence of reflux following jejunostomy. Certainly there is a danger of cryptic anastomosis due to reapproximation of duodenal segments following all types of gastric resection (Rim, op. cit.) but Rim and (1966) believe that jejunal anastomotic strictures are most likely to follow right rather than a gastrostomy, of any one.

These cases can usually be managed conservatively by posture and dietetics, an antacid and aluminum hydroxide gel, but severe cases with shortening of the oesophagus may require the proctoplasty operation described by Leigh Colles (1926) (Fig. 30). This involves deepening the oesophageal pouch angle by creating a gastric tube from the lower curve to lengthen the oesophagus, and closing the two tubes. If the oesophageal stricture is resistant to the above plan:



Fig. 30. Proctoplasty operation for shortening of the oesophagus and reflux.

PHYSIOLOGICAL ABNORMALITIES

In children, it is more difficult to interpret data than that of so-called dumping and a search of the literature fails to find any general agreement as regards its incidence, duration, symptomatology, physiological basis or its relation to surgical techniques.

For instance, Hargreave (1960) reported post-prandial symptoms in nearly 90% of his cases leading to operative work, though 48% went on to regard his incidence, duration, symptomatology, physiological basis or its relation to surgical techniques. At the end of six years, 9.4% of Hargreave's patients still had severe symptoms. Some writers appear to include the reflex loop syndrome amongst these 'dumping' cases, and some the hyperglycaemic syndrome which is a rare and much less post-prandial complication. Colquhoun and Riley (1952) found that it was related not to the type of post-prandial pain but that it is a clinical although Brooke, Waterhouse and Thoms (1962) reflect majority opinion in finding

has dumping, that Balfour's operation. Glaserbach and Wallerson (1962) and Lipshitz, Statman, Reizen and Wallerson (1969) emphasize intestinal hypermotility but Gofner and McKellar (1966) and others found rapid gastric emptying and intestinal hypermotility on a day after a hyperosmolar glucose and opaque medium meal at both dumpers and non-dumpers alike, while Cox and Allen (1960) note hyper- and specific foods which had been found to produce dumping in the patients demonstrated gastric stasis with no intestinal peristalsis during dumping attacks. Confusion is therefore complete. However, much work has now been carried out and certain features emerge.



Fig. 30. A. Thickening of stomach wall. B. Stomach distended (upper).

A true 'dumping' attack occurs at the end of a meal or shortly afterwards lasts 30 to 60 minutes and occurs usually in evening. It is associated with a feeling of fullness, abdominal distension, flatulence or giddiness, vomiting, palpitation and extreme tachycardia. It is exacerbated by standing and relieved by lying down and a few patients complain of flushing.

Between two and three hours later a minority of patients develop a true hyperglycaemic syndrome, mediated by movement or appetite, sense loss of concentration, intense pallor, giddiness and weakness, and sometimes by muscular weakness. How rare as Glaserbach (1962) points out, this syndrome is rare although hyperglycaemia is common and he states that the blood sugar during such attacks falls below 50 mg/100 ml and often to 30 mg/100 ml. Johnson, Sharp and Trenchard (1962) found a marked release reflex and raised haematocrit some 45 minutes after food, at about the time

when dumping symptoms were passing off in enough patients that hypoglycaemia and hypochlorhydria in the 2-4 hour period when these patients were in bed asymptomatic.

Observations such as these have helped in the understanding of the nature of the physiological instability which appears responsible for the early post prandial dumping syndrome. Roberts and his co-workers (1954) have shown that intragastric hypotonic solutions caused a sudden drop in circulatory blood volume in partially gastrectomized patients owing to a shift of fluid from the blood stream to the gut lumen accompanied by alterations in the electrocardiogram and symptoms of dumping. These changes did not occur in patients with intact stomachs. The large volume of fluid in the gut would help explain the feeling of distension and the colic and loose stools in some patients which Hardy (1944) has described as the 'satiation effect' of the dumping syndrome. Hyperosmotic sugars when the gut content becomes osmotic, Amdrup, Hjorth and Jorgensen (1958) used hypertonic, constant medium to differentiate the intestinal osmotic pattern of the dumping syndrome from the gastric dilution pattern of the small intestine syndrome and Andreassen, Davison and Fenger (1961) produced fluid levels with glucose osmotic medium. Blomqvist, Lide, Decker and McKellar (1960) they found small or multicapsular intestinal pattern in both dumpers and non dumpers.

Le Quenec, Holsley and Ward (1960) demonstrated in dogs why, if the hypotension of Roberts and his colleagues was correct, only a small number of patients developed symptoms. Following the oral administration of 50% glucose they found an average fall in plasma volume of 7% but in those patients who developed dumping symptoms, an average fall of 14%.

By giving water at the height they now treated patients varying adversely to both in blood volume and found that the main stimulus to such falls, the smaller the fall in plasma volume required to produce dumping symptoms proved that fall was greater than 7%. Rised and Swenson (1961) confirmed peripheral vasodilatation in partially gastrectomized patients in response to the administration of hypotonic solutions. Holsley and Le Quenec (1960) they demonstrated a direct linear correlation between the maximum fall in plasma volume caused by hypertonic glucose and the rate at which the blood sugar concentration rose. They suggested therefore that dumping symptoms occur in patients who have a primary defect of carbohydrate metabolism with a lag type of glucose tolerance curve and slow absorption of glucose from the intestine, resulting in transfer of fluid from the plasma to the intestine in osmoticable patients. However as Irving, Jenkins and (1961) dumping can be obtained by other hypertonic solutions such as protein hydrolysates and Warner and Clarke (1962) have shown that there is more fluid in the gut than can be absorbed for by plasma flow.

Cox and Allen (1962) found peripheral vasodilatation, active small intestinal peristalsis and with the onset of high bicarbonate a dramatic fall in the blood pressure is 'dumping' following food, as they think and emphasized the role of food 'swell' fluids in this syndrome.

Attempts have been made to correlate the role of gastric emptying with the onset of dumping and Rindshaw, Jorgensen, Davis and Bedford (1957) held rapid gastric

that the stoma should be narrowed in order to reduce the risk of gastric emptying (Gardner 1960; Desjardis 1961) for this merely appears to involve the greater problems of gastric regulation. Above all of the vagus is noted it is better left than. Vagotomy in these cases can only make matters worse.

MALABSORPTION SYNDROMES

It is not possible to do more than touch briefly upon the fascinating and possibly ever subject, the detailed study of which is currently the hot new preoccupation of laboratories throughout the world. While the frequency of post-vagotomy diarrhea appears to have been exaggerated (we have seen only three cases of severe spruery, diverticulitis, enteritis, or colitis when vagotomy is added to a drainage procedure — either gastrojejunostomy or pyloroplasty). Kay (1962) points out that Fowler's studies suggest that malabsorption can be attributed to vagotomy rather than to the drainage procedure, but Butler and Blaxter (1962) have shown an incidence of malabsorption of 43% following vagotomy and gastrojejunostomy and significant increase in fat loss which was not present after either vagotomy or gastrojejunostomy alone. However Cox and Reed (1962) point out that the post-operative diarrhea which occurred when vagotomy was practiced without gastric drainage, was usually relieved by either gastrojejunostomy or pyloroplasty. Butler (1962) demonstrated that the pancreatic response is reduced if the duodenum is by jejunized and thus, for this reason, Billerich's gastroenteritis are less likely to be followed by malabsorption. In the conclusion it is important to note that the proximal third that is so of small intestine plays the most prominent role in absorption (Ruggenstein, Dubois, Lenoir and Serey 1957) and that the muscle of the proximal jejunum is very sensitive to the action of 5-hydroxytryptamine (Fublick, Parks and Dorell 1961).

In gastroenteric patients with gastro-pyloric anastomosis (Caldwell, Wirtz and Kistner (1961) found malabsorption more likely to occur in patients with long poorly draining afferent loops often associated with a non-peristaltic anastomosis-related to high functional colonic content in these loops and controlled by anticholinergics. The exception was one case with high residual gastric acid and Glanderson and his colleagues agree that the high and persistent functional growth and consequent diarrhea. Kinsella, Blumstein and George (1961) confirmed the role of stasis and bacterial overgrowth in post-gastroenteric anastomosis and malabsorption but Louch (1957) considers the chief factor involved following postoperative malabsorption is the delayed appearance of fully formed pancreatic enzymes and their failure to catch up and mix with the food in the intestine. Butler (1961) has shown that the reduced pancreatic secretion may be relieved quite well by vagotomy.

Pratt and Baker (1958) using the non-fecalizing medium, morphologic described the malabsorption syndrome in tropical sprue, malabsorption and Benda and Kay (1964) confirmed these patients in other malabsorption syndromes. They include fecalolysis of the vagus, observation of secondary jejunal folds and shortening of the small intestine, jejunal and ileal dilatation and abnormal peristalsis, hypersecretion and rapid small intestine.

of early gastric emptying is a decrease in gastric emptying after a meal, a condition that indicates that the rate of gastric emptying is low. A more and less directly acting mechanism is the capacity of the stomach to store a meal for an average period of 10 hours postprandially. They suggest that motility is largely dependent upon autonomic nervous mechanisms and that the vagus plays its part.

There is not as yet evidence that gastric vagotomy is prevented by drugs. But others (Longland, McEneaney, Ellis, Foster, and Thompson (1964) and Tarnar (1964) as to any real value in stimulating discharge, dumping or in duodenopancreatic (Wood) and Ellis (1966) concluded that there was no significant difference between autonomic selective vagotomy and total vagotomy as regards to disrupted fecal fat excretion diminished stool volume and increased bowel frequency which affected both groups of post-operative patients similarly. Likewise, Williams and Jones (1966) found selective and total vagotomy similar in their effect upon the excretion of duodenal fecal fat excretion post prandial hypotension, lactase absorption and changes in gall bladder volume.

Anastomosis caused by over distension and Vagotomy to B12 deficiency is not uncommon following gastric vagotomy or vagotomy and duodenopancreatic. B12 is absorbed from the ileum (Brown and Muller (1954) in the jejunum, common factor in patients and absorption is presumably affected by bacterial overgrowth in the jejunum. The duodenum and upper jejunum are the sites of the normal absorption of the precursor of iron (Grunick, 1951). However, Cox, Maynard, Lachin and Cooke (1959) have shown their correlation between iron deficiency and deficiency of B12 and have postulated that B12 malabsorption may be due, primarily to deficiency of intrinsic factor as the result of a reversible chronic anaplastic gastritis caused by the over distension (Wink, 1961). In their case, correction of the over distension, normotension, was followed by return of the serum B12 level to normal. Brown and Bagg (1967) have shown that there is a factor in patients, resection which inhibits the absorption of iron and it may be that disturbed parietal function following gastric vagotomy is relevant.

Weight loss is of course, related to the degree of anorexia and also probably to the extent of the gastric resection. Ellis, Baird, Podnosky and Rava (1964) reviewing anorexia, recorded an inverse relationship between change in weight before and after vagotomy and postprandial anorexia.

A critical paper has appeared recently dealing with the treatment of anorexia following gastric operations, using the first reports of Jones, Williams and Nicholson (1964) and Decker, Edwards and Adkins (1964) of hypochlorhydria and raised alkaline phosphatase levels with anorexia. However, in a survey of 1233 patients with gastric operations Morgan, Ferguson, Wicks, Pollock and Freeman (1967) found only 3% of women and less than 1% of men with anorexia following gastric resection, proven by analysis of increased stool or urinary base found in their stool, hypotony and vomiting, capacity to the ingestion of 400 units daily or 1800 units weekly of vitamin B12. Some post-operative parietal anorexia limited and the serum alkaline phosphatase levels without any change in the serum calcium.

Recently, Higgins and Pratt (1966) found only 1 of 780 postoperative patients with proven anorexia although some 5% more found to have increased diurnal fecal



FIG. 1. *Aspergillus fumigatus* (in *Aspergillus* sp. 1).



FIG. 2. *Aspergillus fumigatus* (in *Aspergillus* sp. 1).

Several writers emphasize the gravity of a postgastrotomy anastomosis and the one described by Braun and Finney (1934) also became diseased and developed metabolic toxaemia. Postanastomotic ulceration and anastomosis were additional complications. Conservative operations carry a high mortality.

Meyers (1935) has reported three patients with pylorus following gastrectomy and treated successfully by a reanastomosis of branches of the II group and Tervo-Markkinen (1935) has shown the reduced capacity of the alimentary canal to utilize vitamins of the B group in the liquid form after partial gastrectomy.

RELATED DISEASES

Some evidence has been produced to show that the post gastrectomy patient is more prone to pulmonary tuberculosis (13%) in the terms of Davies, 1935 and to coronary artery disease than the general population, whether because of an inherent susceptibility or on the basis of subnormal nutrition. The evidence Davies reported might lie in 14% of his post gastrectomy patients. The hazard of associated renal disease has already been emphasized.

THE UNRELIEVED DYSPEPTIC

It is impossible to place stress, and as Kinsella (1935) has pointed out, post-gastrectomy cannot cure a syndrome or gastrocardiomyopathy or food allergy. He emphasizes the need for careful pre-operative selection of cases. Every follow-up clinic has its minority of chronic dyspeptics who report daily dyspepsia and are sorry to part with it. Others passed one of these (Fig. 54). They include the psychopaths who refuse to eat and the toadies who neglect to eat. They are a burden to both doctor and society and transfer a permanent responsibility of the future. However a small number may indeed have something to complain about and in these cases it would be wise to bear in mind the possibility of vagal regeneration increasingly likely in view of the wider employment of selective vagotomy (Minney 1934) and anatomical sections of the vagus nerve (Gillies and Wix 1935). And we still do not know what the long term results will be of dividing the vagus nerve which according to Avery Jones (1935) is 95% afferent.

SOME PRINCIPLES OF SURGICAL TREATMENT

It is clearly impossible to describe the technique of the many procedures available to deal with post gastrectomy problems but it is useful to bear in mind certain principles.

1. If it divides, drain the upper abdomen.
2. Avoid heavy dissection in the presence of massive ulcers. If essential, try to find an avascular plane remembering that here with retained peripheral bile ducts may be divided as ulcers and the area with which the transverse colon may be entered.
3. Local anastomosis of a recurrent ulcer or antrum if perforated is safe. If necessary the same can be done with later.



FIG. 10. (continued) (From "The Watt Steam Engine," by James Watt, 1784.)

4. Loop or obstructed afferent loop: vagus, surgical treatment with further gastric resection if the gastric remnant is large and stony of the pyloric anastomosis distal to the stoma. Enterostomy/stoma is simple, but only deals with the obstructed element insofar as the afferent loop is short or the gastric remnant small; but many of these cases are best attributed to a gastrointestinal anastomosis.
5. Remember that a vagus anastomosis does not necessarily indicate a remnant distal to the point of prior enter surgery. Such a procedure is often due to reducing. Gastroscopy may decide the matter.
6. Reversal of further resection in case of recurrent obstruction associated with parastomal anastomosis, if the afferent loop is short and afferent. High resection may lead to obstruction at the lower curve. Perform vagotomy if this has not been done.
7. In case of recurrent obstruction associated with previous incomplete vagotomy attempt to complete the vagotomy by the abdominal route may be hazardous and unhelpful. Weigh this against the limitations of laparoscopic vagotomy —

- [illegible]

- [illegible]

ANENCEPHALY OCCURRING IN TWIN PREGNANCIES

Report of Three Cases

By Lieutenant Colonel R. Grevens, RAME, and
Surgon-Commander M. C. H. Jackson, RN

To date, there are very few references in the standard obstetrical textbooks regarding twin pregnancies in which one, or more of the foetuses have had malformations compatible with survival.

A recent case of the delivery of a Twin Pregnancy in which one foetus proved to be an anencephalic, stimulated a search into the records of the Maternity Unit of the Royal Naval Hospital, Malta. At Malta, over the past 10 years from 1945-1955 inclusive, it was found that there were two other such cases, giving a total incidence of 1 in 100 of all twin deliveries in the Unit, and it was decided to report them. Recently too, the Royal College of Obstetricians and Gynaecologists has shown an encouraging interest in the subject and this stimulated our decision to publish these cases.

Case 1

The patient, an English woman aged 34, had been married for 4 years. There was no previous significant medical history and no known or female history of malformations. In 1950 this pregnancy of 38 weeks duration such had proceeded as unremarkable. There were no ante-natal, post-natal or, in fact, foetal, problems in this pregnancy. At 12 of the gestation, in 1950 she had a normal delivery of a 7 lb 10 oz male baby, female infant weighing 6 pounds 11 ounces. She was born on 10th December 1950 on her fourth pregnancy, when the previous 3 in 1946, 1947, 1948. An abnormal child, 1 year 2 months old, delivered from her first Marriage (before the delivery, 1945) died young in 1946, after 18 months, of the previous case was delivered in the city. She was 10 years 10 months ago was told no ante-natal problems were detected. She weighed 160 lb (72.6 kg). She was born regularly, and on 20th 1954, after the period of 10 months, was delivered as 10 weeks, and it was noted that she, like her, was born, slightly larger than her sister. The present child, from that she had been, is rather in her sister's line but retained some of her mother's features in 1954.

She was again very regularly, but when, published the situation of more than one foetus and a multiple pregnancy, were not mentioned. Her story remained quiet as he indicated.

The patient was delivered in the Maternity Unit on 10th May 1954 a strong labour and had a spontaneous, correct delivery of a male infant anencephalic female infant weighing 2 pounds 10 ounces, 1 hour 20 minutes of labour, the weight of 10 lbs. It was such as occurred from the previous case, but at this time, the female baby had 12, of the patient's delivery appeared further progress and much later, reached the placenta of a normal female. The antenatal course of this pregnancy was thus unremarkable. At 10 months before the patient had a further spontaneous correct delivery of a 7 lb 10 oz, apparently normal male infant weighing 4 pounds 10 ounces.

The infant was not examined and it is noted that there was, no evidence, phenomena that of the anencephalic were being reported as another infant and delivered.

Case 2

An English woman aged 26, married since the age of 17 years. There was again no previous significant medical history, and no family history of malformations.

In 1951 she had experienced a spontaneous labour and was delivered of a normal female infant weighing 6 pounds. In 1952 she was again delivered, previously of a normal living male infant weighing 4 pounds 10 ounces.

In 1952 the patient had a full-term normal delivery of a male infant weighing 8 pounds 7 ounces.

The next two sons in her present and second pregnancy, in 1953 September 1957 when her present 4th pregnancy was noted to be 34 weeks, and the son of the latter in October of 1957, all appear normally to be male. The pregnancies apparently ended her 1958 miscarriage, when at least 3 embryos were delivered in a single birth date. There is thought to be 4 of the children now living in two pregnancies. Thus there are three pregnancies in 4 years and the other 3 sons to be in future years.

The patient was immediately referred to the physician for 10 years and observation. In 1961 reference is made that at no time in her pregnancy did this patient show any signs of hypertension.

At 34 weeks on 12th February 1958 an artificial rupture of the membranes formation was carried out primarily because of the onset of a pre-empted abortion and later because of the increasing discomfort experienced by the patient.

Uterine pressure was recorded 20 times; time and volume noted. 2 hours following the onset of labour an unusual heavy delivery was reported and this was followed by further potential severe shock. An apparently normal living male infant weighing 8 pounds 10 ounces was delivered. After a further 5 minutes there was a spontaneous normal delivery of a fresh stillborn male meconium-stained infant weighing 4 pounds 15 ounces.

The placenta was totally separate in its separate membranes and normal appearance of cord.

DISCUSSION

From a study group of 3,000 consecutive births at the Chicago Lying-In Hospital which included malformations likely to handicap a maturing child or interfere with its development, it was concluded that only 1 per cent of all fetuses were found to have congenital malformations. It was also noted that malformations were most frequently found in infants born to mothers at the beginning or end of their reproductive ages. It is interesting to note that the three patients reviewed here were between 23 and 24 years of age.

The incidence of malformations incompatible with life appeared to be greater in twins than in single pregnancies. Among a series of 1,044 mono zygote deced because of malformation, this being twice the incidence of foetal malformations found among single infants in a retrospective series taken from the same hospital.

In no instance were malformations the cause of death of both twins, despite the fact that some of the malformations were present in one member only of a monozygotic pair.

The umbilical cords of monozygotic twins are ordinarily attached to their appropriate portions of the one placenta. Occasionally they lie so very close proximity to each other and may in some rare instances be inserted into each other with direct fusion of the major blood vessels. Such communications between the large blood vessels supplying different fetuses are common with monozygotic twins or in related intercommunications between the smaller vessels of the villi.

It cannot be assumed that if malformations such as described in these cases were found in only one member of such pair of twins, they are genetic in origin, and of course the importance of parental factors in the causation of foetal abnormalities has been accepted for some time. The arguments against this are: one that the same genetic environment of each of the pairs of twins must be very similar, and two that in monozygotic twin pregnancies one twin in each pair may be perfectly normal while its partner may show gross abnormalities. Some of the most abnormal fetuses observed have developed from a single ovum which had also produced a normal (and by chance).

In all the cases in which one cord has found attachment to the other, the fetus with the secondarily attached cord was smaller than its normal cot and severely malnourished. One can imagine from this that position may well have played some essential part in the normal development of the placenta and its cord attachment, but that it was the inadequacy of the blood supply to the less fortunate twin from the beginning of the pregnancy and continued later by the gross and abnormal appearance of the vessels of the placenta, that caused retardation of growth and subsequent abnormality in the critical weeks of organogenesis.

SUMMARY

Three cases of twin pregnancy with the presence of an *amniophetal* fusion are recorded.

The incidence of malformation in twin pregnancy is discussed.

ACKNOWLEDGEMENT

One thanks are due to Professor Ross Adams, D. F. Gray, D.S.M., M.D. (P.R.C.), (P.R.C. (Sgts)) (Child), Hon. Medical Officer in Charge, Royal Naval Hospital, Malta, for permission to publish these reports.

REFERENCES

- Garvi, M. B. and Perera Edith, L. (1977) *Impaired or Compromised Malformation*. (Penguin, 1977).
Perera Edith, L. (1961) *Pathology of the Fetus and Infant*. 2nd Edition. (New York: Medical Publication).

Articles

CARDIOVASCULAR RESPONSE TO THE USE OF AN EXERCISE MACHINE ABOARD A FLEET BALLISTIC MISSILE SUBMARINE

By David R. Collingham* Lt, Medical Corps, USN, and
Paul Hunsicker, The University of Michigan

The late President John F. Kennedy was an advocate of physical fitness. During his Administration the quarterly physical fitness testing of armed forces personnel was instituted; a programing skill referred to as "the DUK's." These tests assess individual physical fitness about succumbed complications requires a level of performance that are according to age. If a man receives a passing score he is entitled to "fit" for another three months; his current state of collapse, following, the "fit" and should run never-ending. Only in rare instances do programers start to realize that man to improve his physical capacity in the interval between test periods.

The combat blower and the Navy bugman have a program of hard physical conditioning included as a part of their training. This need for great endurance is unquestioned; the personnel involved are aware of the physical demands of their work and are interested toward preparing themselves for it. In contrast the average sailor may be an occasional basketball or tennis man whose physical training probably ended when he left high camp. As such, this technician leads a physically unimpeachable life and at sea he could be assigned to a Polaris missile carrying submarine spending an average of 60 days at a time on submerged patrol.

Although the Polaris submarine is a thing of beauty compared with the "last boat of World War II" the crew is confined to a completely closed environment. Physical activity is a necessity. On submarine is not spacious enough to permit active sports. Solitary living is mandatory with card games, movies and reading forming the bulk of the entertainment available. In view of this confined existence it would seem logical that the potential physical fitness of the crew would deteriorate, helped as they are to rapidly developing atrophies in the form of the "backyard mechanical malfunctioning and inside situations" submarines crew have had are specifically trained to think and act quickly. Luckily an as imposed from them an effective remedy for poor activity in the form of a modified exercise program could contribute to the readiness of the crew to meet an unexpected situation.

*The opinions or assertions contained herein are the private ones of the writer and are not to be construed as official or reflecting the views of the U.S. Navy Department or the Naval Service at large.

METHODS AND PROCEDURES

During the first week of a five minute Polara, group of 30 volunteers was informed from the crew of the USS *Thresher* (SSN 595) (SSN 595) that they were going to take part in an exercise experiment that every other crew member would be selected alternately to undertake at 10, 20, 30, 40, and 50 days. The other half would be asked to return from deliberate duties of any sort during the next period. The crew were debriefed at the outset when it was determined that they had recently participated in fitness-building activities. One week later they had just completed their week of training as an underwater swimmer.

One day prior to the onset of the study, no programme. All of the 30 men were given a modified Harvard step test. This consisted of stepping up and down on a 16 inch bench at 30 steps per minute for five minutes. At the termination of the exercise the subject sat on the bench and a radial pulsecount was taken for thirty seconds, starting at one minute after exercise. The count was multiplied by two and recorded. To assure the proper rhythm an observer counted cadence for the duration period. After three weeks, both the experimental and control groups were selected as the control group.

During the first day of exercise the experimental group was given a demonstration of the control using installed on the motor driven bicycle-type exercise machine.¹ Each man was observed while using and suggestions were made on the proper use of the machine as indicated by the accelerometer. Repeated emphasis was given to the necessity for daily participation and to the requirement that all exercise periods required maximum muscular effort. The following exercise schedule was given along with a check-off for collecting data on participation.

EXERCISE SCHEDULE

For day — demonstrate riding protocol with the subject along with an on-looker and riding schedule with the subject (pushing, pulling, and pedalling with the assistance of the machine) three times (pushing 1, 25 seconds, 100 seconds).

Next 3 days — 10 minutes, 10 minutes, 30 seconds of each on-looker and 10 minutes, 10 minutes.

Next 3 days — 10 minutes, 10, 40 seconds of each, 10 minutes of each.

Next 3 days — 10 minutes, 10, 40 seconds of each, 10 minutes of each.

Next 3 days — 10 minutes, 10, 40 seconds of each, 10 minutes of each.

Next 3 days — 10 minutes, 10, 40 seconds of each, 10 minutes of each.

Next 3 days — 10 minutes, 10, 40 seconds of each, 10 minutes of each.

Next 3 days — 10 minutes, 10, 40 seconds of each, 10 minutes of each.

Next 3 days — 10 minutes, 10, 40 seconds of each, 10 minutes of each.

Next 3 days — 10 minutes, 10, 40 seconds of each, 10 minutes of each.

The manufacturer of the machine supplied a timing device which usually indicated the exercise period. The operator had only to press a button in the control of his daily exercise to activate the timer. The beginning of each exercise period was indicated by the appearance of a red light, which would go out when the next period began. During the rest period the machine continued to run, but the operator made no effort. At the red light came on again, he exerted maximum effort as a pushing motion with his legs, and a pushing and pulling motion with

¹ Model 127 Exercise, supplied by American Can and Co. Inc., York.

but none. The content of exercise increased gradually throughout the seven-week testing period.

RESULTS

The results of seven weeks of exercise are given in Table I. The entire exercise period, including the administration of both modified Harvard step tests, was accomplished while actually in, paired as a single space. During this time the atmospheric levels of carbon dioxide never exceeded 1.5 per cent, the oxygen level ranged between 19 and 21 per cent, and no other atmospheric constituent exceeded its normal limit.

Table I depicts the striking cardiorespiratory improvement attained by the Bascom Group. The average increase in pulse rate recovery after the step test was 26 per minute. In testing the significance of the difference between the usual rest score and final rest score a *t* value equal to 9.15 was obtained. This represents a highly significant improvement in physical condition. As an aside it should be noted that the group included the oldest subject (47) and the youngest (17) man on board. The greatest improvement in change in pulse rate of 45 was made by a subject in his first test run.

TABLE I
EXERCISE GROUP

Subject	First Test Pulse Rate	Final Test Pulse Rate	Difference (d)
1	134	104	-30
2	140	94	-46
3	170	104	-66
4	151	129	-22
5	156	100	-56
6	144	100	-44
7	150 ^a	126	-24
8	161	122	-39
9	143	112	-31
10	121	100	-21
11	154	124	-30
12	148	100	-48
13	144	104	-40
14	143	113	-30
15	155	114	-41
16	150	114	-36
17	154	109	-45
18	146	104	-42

$$\sum d = -648$$

$$\sum d^2 = 31768$$

$$\sum d^3 = 2340$$

$$n = 18$$

$$\bar{d} = -36$$

$$s_d = 18$$

$$t = \frac{\bar{d} - 0}{s_d/\sqrt{n}} = \frac{-36}{18/\sqrt{18}} = -27.2$$

TABLE 1
CONTROL GROUP

Subject	Input Rate Pulse Rate	Fixed Rate Pulse Rate	Self-rates (d)
1	100	100	0
2	100	100	0
3	100	100	0
4	100	100	0
5	100	111	0
6	100	100	0
7	100	100	-0.5
8	100	100	-0.5
9	100	100	-0.5
10	100	100	-0.5
11	100	100	0
12	100	100	-0.5
13	100	100	0
14	100	100	0
15	100	100	0
16	100	100	0
17	100	100	-0.5
18	100	100	0
19	100	100	0
20	100	100	0
21	100	100	0
22	100	100	0
23	100	100	-0.5
24	100	100	-0.5
25	100	100	0

$\sum d = 0$
 $\sum d^2 = 5.0$
 $\sum d^3 = 0.0$
 $\sum d^4 = 0.0$
 $\sum d^5 = 0.0$
 $\sum d^6 = 0.0$

$$t = \frac{\sum d - \frac{(\sum d)^2}{n}}{\sqrt{\frac{\sum d^2}{n}}} = \frac{0 - 0}{\sqrt{0.2}} = 0$$

The changes in the Control Group test scores are summarized in Table 2. The maximum improvement for any subject was a decrease of four beats per minute and the average difference between the initial and final tests for the entire group was zero. A *t* test for significance yielded a value of 4.157. There was apparently little change in the physical condition of these men.

DISCUSSION

Left to their own resources, some of the test subjects in FIRST voluntarily cut out of their own exercise programs. One or two groups left weights, several individuals left the push-ups and sit-ups on a fairly regular basis. The great majority of the men, however, did not discontinue exercising.

No volunteer is likely to be a typical physical fitness man; nearly all of them are fat. Obtaining volunteers for an exercise study therefore is no problem. After a week or two, however, the participants realize that considerable work is involved in keeping up with the program and not without reason. Of the original 75 men, only 33 completed the program. The situation was would have been

higher had no previous been used to obtain continued participation. The programme was not compulsory and even men chose to attend it. Generally the men who reported to work on time (high pulse rate on initial testing, overweight men) were among the first to drop out.

In order to sell a programme of exercise for the promotion of fitness one must be able to outline clear cut benefits to the individual. Telling an overweight Navy Chief that he will feel better and describing it in terms of language that exercise will be good for his deteriorating body is not likely to provide him with the motivation necessary to carry out noticeable changes on a continuing basis.

To assist in the promotion of physical fitness programmes the American Medical Association in a special report on interest and actions reflect the following goals for fitness programmes:

General fitness presents a person's image, life in the future. It is old time in the days of industry with consequences: one should still have enough energy to enjoy retirement, should still be able to do the things that give meaning to the daily routine. The concept of a "fitness" type action and several physical demands may be laid upon individuals and groups. The person as a physical strength, speed, and endurance item enables the individual as group to survive, reduces the risk of illness, may yield satisfaction.¹⁰

In view of the individual's life a more appropriate plan for the maintenance of fitness for this group would be most difficult to write.

Cardio respiratory improvement as the result of hard exercise of the kind undertaken in this study was not unexpected. Chagnon has improved physical conditioning for groups and individuals totaling about 2500 individuals over a span of 25 years. He has discovered that golf, bowling and tennis type social activities do not change oxygen intake under work nor basal metabolic rate, strength, total body response time or muscular endurance. The results of his work have convinced him that hard physical exercise seems to be the only way to delay the deterioration of capacities and of condition in general. He has evidence that the human condition deteriorates at a rapid rate after 15 years of age, so that by age 25 an ordinary sedentary individual has lost about 60 per cent of the aerobic loss through exercise he had at age 15.¹¹

The untrained person can improve his tolerance for exercise by following a regular regimen such as the "400 plus" but an ordinary layman once he will will not approach his physiological limit of activity. Adapted leisure such as a feeling of benevolence, good conditions or pleasant discomfort evokes reduction in sensation of activity. Usually the untrained individual reduces or decreases his performance long before physiological limits are reached when he feels slight fatigue or loses over exertion. Reported growth of tolerance means, however, increasing with light exercise or not enable the individual to overcome these conditions and experience the phenomenon known as second wind. This represents an adjustment of the physiological reserves of the body which temporarily banishes fatigue and enables the individual to continue his activity with renewed vigour. Exercise which regularly approaches physiological limits—coupled with adequate rest—results in the development of increased strength and endurance. The exercise programme followed in this study met these criteria and the results were important.

DENTAL PRACTICAL NOTE FOR THE VIRILUM ORY-VIEW ASPIRATOR

By Surgeon Commander (Dr) E. E. C. Cull, R.N.

The Virilum Aspirator is considered a very useful addition to the armamentarium of the Naval Dental Surgeon.

It is possible to greatly improve the effectiveness of the Aspirator when it is required for surgery by the addition of the following apparatus:

Requirements:

1. Quarter inch long rubber or polythene tubing of suitable length.
2. Mould (Blowpipe: Naval Stores Item 517/1028).
3. An empty cartridge of Lulebrom.

Assembly:

The Cartridge is removed at its neck, the rubber plug removed and the blowpipe shortened to a convenient length. Blowpipe tubing and cartridge are linked together and the latter used for insertion into one of the two smaller apertures of the Aspirator.

CONCLUSION

The addition of this accessory very greatly increases the value of the Aspirator and it will be found handy in operation.

No claim is made for originality for this idea and I am grateful to Surgeon Vice Admiral E. D. Coldwell C.B. for permission to publish this practical note.

It is thought that this article, which was published in March 1944 and appears should follow, might be of interest to both Service and General members of the Royal Naval Medical Service.

THE PREVENTION OF VENEREAL DISEASE IN THE ROYAL NAVY*

By Surgeon Vice-Admiral Sir Sheldon Duffley,
Medical Director-General of the Navy 1941 to 1943.

I have hesitated on the problem of preventing venereal disease in the Navy for thirty eight years without getting any nearer a solution. There has been a disinclination to take on this case just because it is a few aspects of the subject which tend to be forgotten by the young and enthusiastic naval cadets.

The psychological factors which frustrate many of our efforts at the preservation of health are nowhere so markedly in evidence as in our attempts to reduce the incidence of venereal disease. The first cause here for failure is found in the naval worker. I deliberately say naval worker instead of doctor because the control of venereal disease is far more a problem in social behaviour and herd psychology than one of mere medical administration.

Lectures with the intent of trying to inculcate clean living on official and shore grounds are almost pointless in future when we are dealing with adult sailors living the crowded community ship life, away from home and family influences, because the huge majority of sailors have already formed their attitude towards prostitution elsewhere and maintained their own tolerance with any priggish or ethical code they profess.

The great force of the sexual instinct, which is constantly working against our efforts to inculcate chastity as the men are taught against contracting venereal disease is the reason why the mere telling of men, however forcibly, not to touch loose women has produced no measurable results on the morbidity of venereal disease.

The self-preservation instinct, that is the inclination of the fear of getting venereal disease or the fear of punishment for getting venereal disease has been largely used in attempts to oppose the desire for women, with as far as I can judge no success. Apart from the ethical and psychological disadvantage of encouraging the unimportant safety first principle of fighting men the use of the heavier type of tactics in this has the great drawback of placing the medical officer in an awkward position. He gives a lecture which implies that if you get venereal disease you will become a cripple due to the malodour, and ruin the health of your wife and child too. Immediately afterwards he advises in the sick bay and examines one of his patients who has got venereal disease and even a second condition of pain, but that he need not worry as provided he seeks to the treatment, he will be perfectly well cured. Such a complete volte face on the part of the lecturer does not tend to increase the confidence of a ship's company in their medical officer.

*Reprinted from *Ship-Medical Conference on Venereal Disease*, Royal Society of Medicine (1947) p. 26, with the kind permission of the Honorary Editors, Royal Society of Medicine.

A difficulty with all health propaganda is the great stress that must be placed on it to maintain all health by constant apprehension or distress phobias. Because it is more necessary for a man to think too much about his health. Let us be honest enough in our lectures on venereal disease. Venereal early and properly treated venereal disease is a venereal complaint which should rage briefly or not directly.

For of punishment as a deterrent is condemned by most smart naval medical officers. It is doubtful if punishment has any effect on his behaviour. It certainly leads to abandonment of disease sufficient treatment and increased spread of venereal infection. The use of local disinfection in conditions is a thorny subject. One thing must clearly be kept in mind. As Service doctors our only duty is to keep as many men on the fighting line as possible. Therefore even if it is true that 10% disinfection increases the amount of fluid administered by reducing loss of the consequences, it is an affair of mine and it is our duty despite any personal feelings on the subject to encourage the use of such measures if we honestly believe the attack of disease is reduced thereby. In the Navy we prefer the use of the thought of condom in any pocket system. We have abandoned abstinence chambers in ships as useless, and the use of naphthol and penicillin as prophylaxis are still in the experimental stage. Condoms are more efficient and logical than pills, and a condom also has the advantage of protecting the female from infection and pregnancy.

The statistical evidence I have examined is not good enough to persuade me that condoms have had a significant effect on total venereal morbidity. However, maybe they can decrease the number of cases over short periods and combined with effective propaganda they can considerably reduce power during the period of an epidemic.

Another obstruction to the effective control of venereal disease which is not always realised in the service is should be in the considerable difficulty in collecting and interpreting statistical data on venereal diseases. There is no time to discuss this and subject is dealt but as a glaring example of the unreliability and illogical interpretation of venereal statistics the alleged effect of the action of alcohol on the morbidity of venereal disease may be briefly considered.

Thus after years in the official report on 'The Health of the Navy' in the section of the steps taken to prevent venereal disease it was stated that much improvement in venereal morbidity was to be expected as a result of the steps taken to increase the temperance of the sailor and many experienced Service venereologists attribute great weight to abstinence as a factor which determines the magnitude of venereal disease rates. I have heard one venereal disease specialist proclaim the 75% of his patients were drunk at the time of infection and the remaining 25% had taken drink when they contracted their venereal diseases and that he was convinced abstinence was a major cause of venereal disease.

A sympathetic medical officer went one day to visit rather carefully some prisoners and after having got their confessions many venereal disease patients who had at first stated that they were drunk, subsequently admitted that they were not as intoxicated as they had claimed their disease, but they had said so and they were because they knew that they would be regarded as more unfortunate than usual if they said they were drunk. There is no suggestion that the collection of judgments

and still I cannot be particular in fixing eye sight, perception etc. in children & yet not account in a satisfactory manner of cerebral education but it is essential to notice that there is no reliable statistical evidence of what fraction of cerebral disease morbidity can be accurately attributed to this factor. All we do know is that the tremendous change for the better in the drinking habits of the naval personnel which has taken place in recent years has not been accompanied by a commensurate fall in the incidence of cerebral disease.

This is an example of the caution necessary in the interpretation and reliance of all medical statistical data.

So let I have been particular. However when we consider treatment in connection with the prevention of cerebral disease the outlook seems brighter. Connected with the introduction of arsenical drugs the incidence of syphilis in the Navy dropped rapidly from about 50 to 4 per 1000. It was hoped that the introduction of the sulphur drugs would have the same effect on gonorrhea as the arsenicals had had on syphilis but the naval figures show little evidence of this at yet which is perhaps not surprising as syphilis is a deeper infection, progresses more slowly while gonorrhea does not. Whether the arsenics rapidly and which possibly diminish the danger of gonorrhea will have a greater effect on lessening the incidence remains to be seen.

Now there is a lot but more important point. Our use of data as naval medical officers is to keep as many men at the guns for as many days as possible as our American naval colleagues say and if we cannot prevent illness we can prevent some thousands of days sickness by refusing to hospitalize cerebral patients. Simple uncomplicated primary syphilis and gonorrhea are easily treated at duty as these ships without necessarily leaving a day by sickness. In the case of gonorrhea with the new sulphonamide group treatment is now merely a matter of swallowing pills and with syphilis mostly the giving of intravenous injections and finally very few men worth the name of doctor in this line. Cases of cerebral disease almost disappear themselves and we rarely do not need to treat that much our men go to a venereal disease specialist. Yet only the other day I read a letter in the *Lancet* denouncing that no one but a well sighted venereal disease specialist should be allowed to treat a venereal disease. Well let him have his way but let me say who make every naval doctor a venereal disease specialist and naval medical students specializing along venereal disease before they join the Services. Or as I would prefer to put it we specialists in venereal medicine require a knowledge of cerebral disease to practice our specialty and only occasionally need the advice of a consultant in the subject.

It is therefore to be regretted that many have for a long time supposed that any means to send their venereal disease cases to hospital or to place them under the care of the venereal disease specialists and I am delighted to observe that the admission of hospitalizations of venereal disease patients is increasing. In this respect the introduction of labelled venereal disease specialists into the Navy was a retrograde step because it has caused far more patients to be sent to the specialists in our hospitals than need be. Before the introduction of sulphonamides the recorded cases of venereal disease in the navy almost double rather for

gonorrhoea was about eighteen days in the Navy against fifty days in the Army. Of course the Navy took just as long to treat their gonorrhoea patients as the Army, but most cases in the Navy were treated in duty while in the Army they were, inevitably sent to hospital. The eighteen days therefore really refers to days of duty not to days under treatment. Hence although the incidence of venereal disease in the Navy was almost twice as great as the incidence in the Army, the loss of man-power caused by venereal disease was considerably less in the Navy.

Treatment at duty is moreover good treatment as it largely prevents the depression, loss of tissue and feelings of weakness that are caused by the long periods of ill men suffering from venereal disease. Always in a fighting service, it is the total days off duty rather than total number of cases that counts.

The learned Lord Chief Justice's alleged medical supervision has proved more a nuisance than a safeguard against gonorrhoea owing to the impossibility of keeping women free from gonorrhoea or curing them at the outset or even disposing the disease when present. Up to now so-called medical supervision of prostitutes is mere eye-work. But if penicillin holds its promise it may be possible to keep prostitutes 100% clean with very little supervision. If this were true, speaking merely as a doctor interested in reducing the amount of venereal disease in the Navy the prophylactic value of licensing the prostitutes and bringing in inspectors would have to be examined.

VITALITY OF DENTAL PULPS TESTED WITH HEATED GUTTA-PERCHA: A SURVEY

Isagron Unerman (Dr. A. J. Rupp-Gunn, RN)

Introduction

Several ways of investigating the vitality of teeth are known. Most of these involve determining whether the nervous system of the pulp will respond to stimuli. The stimuli can be thermal, electrical or tactile. Other methods investigate vascular changes in the pulp and can be spectrographic, calorimetric, or involve the use of isotopes.

One of the methods, most commonly employed in practice consists of applying heated gutta-percha to the crowns of the teeth and noting the subjective response of the patient to thermal change.

In this survey the application temperature of gutta-percha was investigated and an attempt has been made to relate the sensation experienced by the patient to the actual temperatures at which the gutta-percha was applied.

Method

Fifty-three different operators, (dental dental students) were asked to test the vitality of the upper central incisors of patients (also dental dental students) with heated gutta-percha. Some time previously all these operators had been instructed in this technique as part of their training. A special lamp and gutta-percha sticks of the same brand were used throughout and no further advice was given to the operators on the heating and application of the gutta-percha.

Upper upper central incisors were chosen for testing. A thermoelectric couple was placed against the labial mesial third of the tooth by an assistant and the operator applied the heated gutta-percha with the teeth onto the tooth. The thermocouple was connected to a potentiometer on which the temperature could be read from 0° F. - 112° F. The temperature scale was printed on 1° F. A transparent insulating of the gutta-percha in contact with the tooth surface was then taken with the potentiometer and recorded. Precision in obtaining quick accurate readings of the temperature had been obtained before the survey began and only about three seconds were required to obtain readings accurate to $\pm 2^\circ\text{F}$.

The patient was asked what he felt with respect to the heated tooth and this was recorded — positive or negative according to whether the patient felt pain or not. The other upper central incisor was then similarly tested. Nine qualified dental surgeons applied heated gutta-percha in a similar manner.

Eight of the student operators repeated the test, but on different groups of patients. In the case of two of the operators the repeat was on the same day and in the other six two to six weeks later. After a further five weeks all eight operators repeated the test again.

Certain patients gave a positive response to gaseous peroxide applied below 140°F. These patients were then subject to a special survey where the gaseous peroxide was purposely applied cool (115°F-135°F) and the patients' responses recorded. Certain patients gave a negative response when gaseous peroxide was applied at over 145°F. These patients were then subject to a special survey where the gaseous peroxide was applied at high temperatures (above 165°F) and the patients' responses recorded.

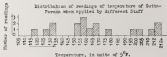
FIGURE I

Distribution of readings of temperature of Gaseous Peroxide when applied by different students



FIGURE II

Distribution of readings of temperature of Gaseous Peroxide when applied by different staff



ANALYSIS

Fig. 3 shows the spread over the temperature scale of temperatures at which pain-percha was applied by different students. Fig. 11 shows the spread over the temperature scale of temperatures at which pain-percha was applied by qualified dental surgeons. It is seen that the application temperatures for students and staff are fairly evenly distributed and ranges from 101 F to over 202 F.

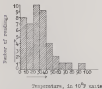
The thermometer only read up to 202 F therefore temperatures above this are grouped in the right hand column. Since the exact temperature in excess of 212 F is unknown a mean temperature is not discernible.

The left upper central sector of each patient was tested immediately after his right central sector. The difference in these two application temperatures is shown in Fig. 10.

In Fig. 19 the patients' responses are plotted against temperature. It will be seen there is little correlation between the response and the temperature at which the pain-percha was applied. Although known non-test or crossed teeth were excluded from this part of the survey, 56 per cent of the teeth gave negative test points.

FIGURE III

Showing difference in temperature between the readings of t_1 and t_2 , by same operator, on same patient, at the same time



In the case of six teeth it will be seen that a positive response was recorded although the temperature was below 100 F. These teeth were re-tested at a later date with the application temperatures deliberately reduced to between 102 F and 106 F. On second application six patients gave positive and four gave negative responses.

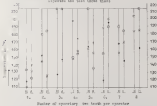
FIGURE 17

Sampling Distribution of Positive and Negative responses from testing randomly sighted people, divided equally between, and between, trials.



TABLE 18

Temperature divided into Eight Operators reported the task time time



Temperature divided in

First testing	120
Second	130
Total	140

Thermal tests failed to respond to application temperatures of over 145 F. There were also no record at temperatures of over 145 F. In some of these instances there were positive responses and in the other not the response was negative. None of them had any other signs or symptoms of non-vitality.

Eight random operations started on the test three weeks before the tooth each time. The different application temperatures at each test are shown in Fig. 5. It can be seen that the results are no more consistent on the third attempt than on the first.

Discussion

In clinical practice an attempt would be made to apply heated gutta-percha at such a temperature that a vital tooth would respond but not be damaged. Usually at the effective maximum. The temperatures at which gutta-percha was applied to the tooth by student operators varied greatly and the variation was not limited to the hands of experienced staff members, nor when the students repeated the test three times. This suggests that controlled temperatures by this method are very difficult to achieve.

The variation experienced by the point of tissue bite relative to the temperature at which the gutta-percha is applied. This was borne out by the exposed teeth in groups at the extremes of the temperature range. There was a gradual increase in the pain experienced as the temperature of the gutta-percha was increased, but the temperature at which this occurred varied greatly from tooth to tooth.

At the temperature of the gutta-percha, raised and as soon as high temperature, a sensitive fails to produce a response in a vital tooth. Pulp testing by this method seems open to serious disadvantages.

Moreover, false negative results can be produced by (a) too cold gutta-percha (b) such secondary dentine deposition that a decreased pulp and (c) psychological factors. It was observed that the less sensitive teeth were anterior or heavily filled teeth. Some patients of phlegmatic personality may be less inclined to complain of pain which is this test is the only means of assessment.

A false positive can be recorded due to (a) a gingival pulp protruding pericorona on the sides around the apex of the tooth due to the exposure of the heated gutta-percha and (b) psychological — a very apprehensive patient anticipating pain. It was interesting to note that hyperaesthetic teeth often occurred in patients with proclined upper incisors.

Although there may be more reliable ways of testing the vitality of teeth, occasionally heated gutta-percha is useful. For example, a tooth with a large dentine filling which has exposed pulp is unsuitable for testing with the electric pulp tester. In this case heated gutta-percha is indicated. Heated gutta-percha would produce severe pain which would disappear on removal. In this case it is not the vitality which is tested but rather the inflammation which is being looked for.

Summary

The temperature range of hot gutta-percha used for vital pulp testing has been evaluated under normal clinical conditions. The results showed wide variations

in the range of temperatures at which the glass panes were applied on different occasions and water solutions in the maximum temperature levels required to elicit a positive response in individual teeth. The possible causes are discussed.

Acknowledgement

I wish to thank Mr M. Loringstone Ward, L.D.S., B.D.S., of the London Hospital Dental School for his advice during the survey.

Letter to the Chief

Sir,

With reference to telegram Captain F. P. Ellis's letter to the under 1800 number of the Journal the following remarks are, we think, pertinent and may help to clarify the position regarding the disposal of personnel who react strongly to tuberculosis when quoted on entry into the Service.

Between March 1945 and February 1948 a Mantoux Testing programme was carried out on youth and adult entrants at Victoria Barracks. A first analysis of this project was made by one of us in 1944 and in the report the following remarks were made: "It would appear that the chance of an entrant being associated with tuberculosis are roughly the same (1.7 to 3.6 per 1,000 per annum) if he reacts on Mantoux Testing in any of the following ways:

- (a) Negative to both 5 and 100 T.U. tests
- (b) Negative to 5 T.U. but positive to the 100 T.U. test
- (c) Positive to the 5 T.U. test with occurrence of from 5 to 14 mm diameter of induration on entry

If however he reacts to the 5 T.U. test with an area of induration measuring 15 mm or more in diameter (no chance of being associated with tuberculosis is mentioned in 3.6 per 1,000 per annum). This analysis covered a period of years in 1/2 months exclusively after entry and the results are similar to those found by Fisher, Johnson and Edwards (1942) in American Naval Recruits and by the M.R.C. Test Report (1939).

As a result of the report referred to above an Admiralty Fleet Order was issued in July 1945 (A.F.O. 1280/45). Paragraph 10 of this order recommended that personnel who reacted strongly to tuberculosis should undergo an monthly chest radiography for the ensuing three years.

It has been suggested that strong reactions should be prevented by chestography from entry. Hail (1946) advocates the use of six months chestography before entry on those of 18 years of age or younger who have not previously been inoculated with BCG and who react strongly to tuberculosis. The use of chestography in infants and young children at such concentrations is generally accepted.

Chestography alone cannot in fact of course, without risk to the individual and there must be sound indications before its use can be justified. It is considered that a strong tuberculin reaction (15 mm. + diameter of induration to the 5 or 1 T.U. Mantoux Test or fluid grades III or IV) without evidence of tuberculous disease is not, at the present time, a sound indication for such action, especially when one bears in mind that it is often impossible to determine whether or not an entrant received BCG inoculation at school.

Research into the control of tuberculosis in the Royal Navy continues and until such time as there is stronger evidence in support of the use of isoniazid/praziquantel the follow-up routine (i.e., isoniazid) class X says for three years as recommended in A.F.D. 1280/68 should continue to be used for strong infection reactors.

Signed

J. H. Bennett

Surgeon Commander R.N.

L. G. Topham

Surgeon Captain R.N.

N. Lloyd Rasthy

Consulting Physician in Diseases of the
Chest to the Royal Navy

REFERENCE

1. *Proc. Personnel P. 1/68*: Revised control policy.
2. *Medical Branch Circular 1280y* (to Med. J. D. 28).
3. *Parson E. J. Parson X and Edwards T. G. 1967* (letter to Editor 76 517).

Reviews

1. *Measurement in Psychology*. By John D. Lapin and C. A. Miller. (The Editors.)
 Oxford: Oxford University Press Ltd. 1966. 10s.

This book is an attempt to provide students and teachers with a guide to the measurement of psychological variables. It is a book which is intended to be used as a text in a course in measurement.

The book is well written and the treatment is clear and concise. The book is well written and the treatment is clear and concise. The book is well written and the treatment is clear and concise.

Secondly, in the review we found of the book and the authors' attempt to measure it. We found that the book is well written and the treatment is clear and concise. The book is well written and the treatment is clear and concise.

Thirdly, in the review we found of the book and the authors' attempt to measure it. We found that the book is well written and the treatment is clear and concise. The book is well written and the treatment is clear and concise.

Secondly, in the review we found of the book and the authors' attempt to measure it. We found that the book is well written and the treatment is clear and concise. The book is well written and the treatment is clear and concise.

There is no single issue of accuracy and reliability, but the publication of new editions. The book is well written and the treatment is clear and concise. The book is well written and the treatment is clear and concise.

Secondly, in the review we found of the book and the authors' attempt to measure it. We found that the book is well written and the treatment is clear and concise. The book is well written and the treatment is clear and concise.

There has been a steady change of approach and emphasis on physical theory and observation and the book is well written and the treatment is clear and concise. The book is well written and the treatment is clear and concise.

The book is well written and the treatment is clear and concise. The book is well written and the treatment is clear and concise. The book is well written and the treatment is clear and concise.

A few chapters will treat of the measurement of psychological variables. The book is well written and the treatment is clear and concise. The book is well written and the treatment is clear and concise.

Secondly, in the review we found of the book and the authors' attempt to measure it. We found that the book is well written and the treatment is clear and concise. The book is well written and the treatment is clear and concise.

The book is well written and the treatment is clear and concise. The book is well written and the treatment is clear and concise. The book is well written and the treatment is clear and concise.

investigation in embryology, medicine, and in the study of anatomy, anatomy and the embryology. A brilliant player to make a complete and different approach to a brilliant player.

Any student who has to make the following approach to the following, the following.

1. The following — The following and the following. By R. Howard Bailey, Professor of Physiology, F.R.S., 10, Bedford Square, London, W.C.1. (London: P. D. Colver, 1954.) Pp. 100.

Professor Bailey has written a most thoughtful and long monograph on a difficult topic in embryology, the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo.

The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo.

The following — The following and the following. By R. Howard Bailey, Professor of Physiology, F.R.S., 10, Bedford Square, London, W.C.1. (London: P. D. Colver, 1954.) Pp. 100.

Professor Bailey has written a most thoughtful and long monograph on a difficult topic in embryology, the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo.

The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo.

The following — The following and the following. By R. Howard Bailey, Professor of Physiology, F.R.S., 10, Bedford Square, London, W.C.1. (London: P. D. Colver, 1954.) Pp. 100.

Any review of this publication is a necessary task, as it is a most beautiful and useful book. The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo.

The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo.

The following — The following and the following. By R. Howard Bailey, Professor of Physiology, F.R.S., 10, Bedford Square, London, W.C.1. (London: P. D. Colver, 1954.) Pp. 100.

The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo.

The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo.

The following — The following and the following. By R. Howard Bailey, Professor of Physiology, F.R.S., 10, Bedford Square, London, W.C.1. (London: P. D. Colver, 1954.) Pp. 100.

The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo. The book is a study of the embryology of the embryo, and the embryology of the embryo.

To: Surgeon Lieutenant Commander (LTJG)
M. J. Smith, LDR
To: Surgeon Lieutenant
N. J. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith
To: Army Surgeon Lieutenant
N. J. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith

Personal Selection for Promotion to date 1966 June 1967

To: Surgeon Lieutenant
C. A. Smith, R. A. McDonald and J. M. Smith
To: Surgeon Lieutenant
J. P. Smith, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith
To: Surgeon Captain (LTJG)
J. P. Smith
To: Surgeon Commander (LTJG) J. M. Smith

MOORE SERVICE COMMANDER ENTITIES

Surgeon Lieutenant Commander (LTJG) J. P. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith
Surgeon Lieutenant (LTJG) J. P. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith
Surgeon Lieutenant (LTJG) J. P. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith
Surgeon Lieutenant (LTJG) J. P. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith
Surgeon Lieutenant (LTJG) J. P. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith

TRANSFERRED TO THE PLACEMENT LIST

Surgeon Lieutenant Commander (LTJG) J. P. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith

REMARKS

Surgeon Lieutenant (LTJG) J. P. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith
Surgeon Captain (LTJG) J. P. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith
Surgeon Captain (LTJG) J. P. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith
Surgeon Captain (LTJG) J. P. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith

RELEASED ON COMPLETION OF MOORE SERVICE COMMANDER

Surgeon Lieutenant (LTJG) J. P. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith
Surgeon Lieutenant (LTJG) J. P. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith

REMARKS

Personal to Army Surgeon Lieutenant (LTJG) J. P. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith

**OTHER APPLICABLE RULES, NAVAL AVIATION BOARD
PARTICULARS**

Moore, M. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith

REMARKS

Moore, M. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith

REMARKS

Personal to Surgeon Lieutenant Commander (LTJG) J. P. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith

Personal Selection for Promotion to date 1966 June 1967

To: Surgeon Captain (LTJG) J. P. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith
To: Surgeon Commander (LTJG) J. P. Smith, MDR, J. D. Smith, J. D. Smith, J. D. Smith, J. D. Smith

DEFENCE CORPS INSTRUCTIONS FOR

- 1.2. Surgery — General Services — Reporting
 1.3. Medical — Hospital — General Duty, Records — Royal Marine
 1.4. Post op — Medical Branch — Assessment of Time Left to Serve — Qualifications in the
 1.5. Public in Training
 1.6. Surgery — Medical Branch — Medical Examinations and Medical Assistance — Staff
 1.7. Appointment for Advancement in Public Rating
 1.8. 1.9. — (Photomicrographs) Examination for Colour
 1.9. Training — Surgery — First Aid
 1.10. Medical — General — (General Medical Company) — Reporting
 1.11. 1.12. — The Old (Compassion) Transfer for Unserviceable Soldiers
 1.13. — (General Hospital) in Great Britain (General Hospital)
 1.14. Journal of Officers of the House of the Royal Naval Medical Service and General
 1.15. General Working Party — to the Royal Naval Hospital, Haslemere

BRITISH ORTHOPAEDIC ASSOCIATION MEETING

R.N. Hospital, Haslemere, April, 1967

The Clinical Session of the Spring Meeting of the British Orthopaedic Association

will be held at the Royal Naval Hospital, Haslemere on 15th April 1967

The Earl Mountbatten of Burma KG KC GCB GCVO OM has very kindly accepted an invitation to be Guest of Honour for the day

A commemorative handbook has been prepared for the occasion. It contains the story of Haslemere Hospital from its opening in 1951 to the present day illustrated with many lovely photographs. This is the first commemorative history of Haslemere to be published for our fifty years.

In addition there are cardinals on former medical officers and many other details.

£ 0.00/00

Copies of the handbook are available (price 15s paid for). Applications should be addressed

S. W. Upper Esq.,

Haslemere Hospital Post Office

R.N. Hospital, Haslemere

GU20 1HT.

Journal

of the

Royal Naval Medical Service

PUBLISHED THREE TIMES A YEAR

(An Article of 1000 words or less is accepted for the Spring (January) issue of the Journal)

EDITORIAL	69
DEATHS	
Faint Recounts in Battle By MAJ. A. B. WALLACE CBE MC MCN Ed	62
Immunological Problems of Grafting By DR. ANNEAL SERRANO	64
Hypertension in the Treatment of Acute Brain Injury By DR. MALCOLM BAXTER and LOUISE	70
ARTICLES	
Primary Carcinoma Duplex Associated with Typhus By SURGEON COMMISSAR D. G. HUNTER MC MCN MCN Ed	75
A Salmonella Epidemic in A Small Ship By SURGEON LIEUTENANT L. G. MURPHY MCN MCN Ed	78
Report of the Bacteriological Findings Following an Epidemic of Salmonella Enteritidis in a Small Ship By FLIGHT LIEUTENANT A. J. MANNING RMC MCN MCN Ed	85
Psychiatric Follow-up By SURGEON COMMISSAR D. H. MANN MC MCN MCN Ed and LIEUTENANT COLONEL L. F. J. WATKINS MCN MCN Ed	89
The Royal Navy Medical Club Dinner 1976	94
REVIEWS	96
NOTES OF THE SERVICE	
Obtaining Higher Qualifications: Honours and Awards: Birthday Honours: Promotions: Transfers to Permanent List: New Ensigns: Cadet Ensigns: Retirements: Released on Discharge of Short Service Commission: Warrant Officers: Queen Alexandra's Royal Naval Nursing Service: DCTs	100
NOTES	106

EDITORIAL COMMITTEE

- SURGEON BRIG. ADRIAN S. WHITE CBE
 SURGEON CAPTAIN DR W. B. SHAW MCN MCN
 SURGEON CAPTAIN L. G. THOMAS MCN Professor of Naval Medicine
 SURGEON CAPTAIN J. WYLLIE MCN Professor of Naval Surgery
 MAJ. A. B. WALLACE

Editorial

NEW OPPORTUNITIES FOR MEDICINE

A 3-day international conference sponsored by the British, I understand, Academic Unionists and leaders of voluntary service associations met under the patronage of Her Royal Highness the Duke of Edinburgh to study the Training of Young People for Reserve Medical and Service. In brief, the conference represented an appeal from Education to Medicine for help in relieving the present highly competitive academic system with its existing biases in the human sciences, biology and elementary law and. Opportunities should also be given for increased participation in creative international activities both cultural and physical as well as training for citizenship and community service. The proceedings of the conference will shortly be published and are awaited with interest.

The newly established Institute of Sports Medicine recently held its first meeting of its Academic Board — a group of consultants in the major specialties who in addition have particular interests in the selection, training and medical care of athletes and sportsmen at all levels. Such organizations are well established and efficient in other countries where they provide a coordinating centre for medical education, assessment and treatment facilities in sports lesions and prevent trauma.

Medical Officers in the Fighting Services with their special experience of training young persons, organising sporting events and taking an active interest in problems of rescue, survival and emergency treatment, will have an increasingly important contribution to make as these new developments already the I.N.P.M.C. Working Party on Physical Fitness has initiated an extensive research programme which is already under way and will help to maintain the Navy's by its own significant contribution to the field.

Another angle of the Journal's focus confirms the stability in protein men that there means a year and even so the selective employment tax has hit us and our financial performance is critical. We need more subscribers and more advertisers.

It is a sad situation where more than one third of naval medical officers do not subscribe to the Journal. Reported appeals and especially personal requests to let us know where we fail to give what is wanted are providing nothing but greater inevitably we shall be forced to conclude that the Journal of the Royal Naval Medical Service is not really wanted.

SYMPOSIUM ON RESEARCH IN BURNS

A Symposium on Research in Burns was held at the Royal Naval Hospital, Haslar, on 19th and 20th October, 1966, and was attended by delegates from the United Kingdom, Canada and the United States of America and by Service Specialists and Consultants.

The programme was divided into sessions dealing with Circulatory Disturbance, Local Effects of Burning, General Reactions to Burning, Skin Cover for Burns, Prophylaxis and Treatment of Infection and Care of the Burned Patient. Thirty papers were presented. The programme was introduced by the Medical Officer in Charge, Royal Naval Medical School and the Professor of Naval Surgery and a paper on Burns Problems in the Royal Navy.

Mr A. B. Wallace, Edinburgh, Secretary of the International Society for Burn Injuries, Dr J. F. Ball and Mr G. M. Jackson, Birmingham, and Air Vice Marshal G. H. Morley, RAF, kindly consented to act as chairmen.

The Surgeon Rear Admiral and Officers of the Royal Naval Hospital, Haslar, invited delegates to a Buffet Supper at the Medical Mess and the Professor of Naval Surgery gave a Reception in the Hospital Library.

Three of the papers read at the Symposium appear in this number of the Journal.

FUTURE RESEARCH IN BURNS*

By Sir A. B. Maltson, Reader in Plastic Surgery (University of Edinburgh)

When the future of a problem is to be considered one of necessary must require I felt was a long study of present knowledge. Has the position of prophyphores and therapeutic use of antibiotics been evolved, are antibiotics used intelligently, what is the importance of macrophages, leukocytes, what is the value of isolation chambers and what should be the attitude to relief of burn areas that change their staffing etc? Finally should all surgeons be insured to treat burns? Emphasis must always be made that the injury involves human beings with all the normal human responses to a severe injury. Mowing is of the utmost importance and though leukaemia, hypothermia and anoxia etc, may all be considered human understanding plays a major role.

Every surgeon has his own ideas which sometimes tend to become hobby horses. A meeting, such as this is of great value in focusing a broad outlook through a sharing of views especially those mutually applicable.

I feel very incompetent to speak of the future. I may be voluntary in some ways but I do not have the modern scientific training, or appreciate fully the many possibilities opening up. I doubt, however if any one person can fully comprehend all the issues in burns: the fluid metabolism, the cell and tissue changes, the effect of the injury on blood vessels and the myocardium, the metabolic changes, the blood changes, the pulmonary damage, the resistance to infection, the varying renal conditions, the problems in prevention, the pathogenesis of burn wounds, the problems that go with massive care etc.

Before the war I was limited to our limited and then other nations. I have still to see major burns do better than they used to do with American (a limited and jolly).

In repatriation in my own land we continue to use reconstructed plasma. We are not complacent. We seldom see the septicaemic picture so often described in America. Are we however from the most correct administered concentrating further fluid loss into the extra vascular space? Is there not way of plugging this leak?

One would expect, following injury not only an acute increase of capillary permeability but also a later progressive plugging of the gaps. There would result a relative thrombocytopenia which might be appreciated by the administration of stored blood or plasma, which do not supply viable platelets. Little is known of the function or of the regulation and therapeutic status of burns. Does an initial increase of fibrinolysis exist? If so this might remove the plugs that temporarily seal the gaps and so aggravate the fluid loss of plasma. Alternatively a defect

*Topic raised at a Symposium on Research in Burns at the Royal Street Hospital, Glasgow, on 20th October 1966.

on coagulating whole blood and on fresh thromboplastins, but then a deficiency in effect of using factors from the way of stored blood and plasma which are deficient in these factors. Should we consider the use of fresh plasma, not stored, which supplies coagulase factors? Again fresh plasma has relatively normal potassium levels while stored plasma has higher potassium levels. Some suggest 'leakage' of the fibrinolytic system and in human there may be produced fibrin degradation products — a big field for research.

There is also the possible existence of persistent fibrin. A recent editorial gives the following picture. Blood or fibrin clot contains the seed of its own destruction in plasminogen, which is converted to the active proteolytic enzyme plasmin by an activator present in the blood and tissues. By this mechanism fibrin having served its purpose as a sealing material is converted to water-soluble fibrinogen. Some periods for optimum selection may hinder fibrinolysis. Presence of fibrin clots obstructs blood supply and lymph drainage and mechanically delays healing. It is possible that fibrin could be immunologically damaging to tissues and further studies along these lines might prove rewarding.

There is a trend towards the use of albumin or a plasma protein solution. The latter is a plasma fraction containing mainly of albumin with a little heat stable globulin. Both solutions have the advantage of withstanding a temperature of 50°C. for ten hours and then all viruses are inactivated. The disadvantage of these protein solutions is the lack of V₁ globulin, but this might be overcome by the recent products of more concentrated forms of hyperimmune gamma globulin administration successfully done for intravenous use. The gamma globulins of protein sources are the G.A. and M. types, especially 75 and 195.

I wonder too why the process of photophoresis has not been employed more frequently — the removal of blood and the returning to the donor of the red cells only and the procedure repeated every ten days. This could give supplies of coagulase serum. One unit could be removed weekly for several months.

The significance of bone loss from infection bones beyond a certain depth also requires a greater study. Should our therapy and treatment plans not be revised? Should we try to limit exposed bone? It behooves us to get to know more and more about the properties of normal skin and seek ways and means of restoring these properties if necessary by biological drainage while the healing processes are underway.

In the absence of the formation of a good granulation tissue layer the application of homologous can be left alone. Supplies of homologous can be definite. Is it possible to develop an alternative cover with similar properties? Are there other biological drainage?

Infection plays a major part in deep burns. How bones be retained? Most the bones have dried out or if the rooms be made larger would good ventilation alone suffice? What are the reasons of cross infection? Does self-infection really play a big part? How important is the planning? And what of research in bed construction and further work on leprosy? Can we not discover a portable theatre frame? that can be sterilized and taken from room to room?

I naturally look to the International Society for their requests to play an increasing rôle in their progress. The meeting supplies of members, the sharing of views and ideas, the sharing of disappointments as well as successes. There is the great problem of the underdeveloped countries, the necessary work that is steadily needed. There is the great problem of prevention in all countries. What are the steps to be taken in emergency countries? Do we advance through social workers or field workers and through training doctors?

To me a popular clinic — there is a word of change — we are coming closer to get together. Would we could influence World Health Organisation and UNESCO?

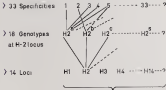
We are grateful to the Service for this meeting — for the chance to get together again. I hope that somewhere each year we in Britain can maintain this 'get togetherness'.

IMMUNOLOGICAL PROBLEMS OF GRAFTING*

By Dorine Arnold Sanderson, Medical Research Unit,
Queen Victoria Hospital, East Grinstead

A rapid and new technique for determining histocompatibility differences between individual humans would be of great value. Before describing our such serological technique, I should like to mention some of the assumptions we make in analysing the results we obtained.

There is good reason to believe that use of immune suppressors such as leucine can, with proper care, overcome all but the strongest histocompatibility differences in man and rat. Recent evidence as the case of man grafted a similar point. Thus a genetic interpretation of the test results data from the Human Kidney Transplant Registry supports but the view that there is a single strong histocompatibility locus with a small number of alleles, or perhaps with common one should



CHROMOSOMAL MATERIAL

Fig. 1 is a diagram illustrating a set of 14 chromosomes, where 2 alleles, that correspond to 18-20 are H1, H2 are on the positive test of which H1 is the original H2 are on the single white, top of the figure, and the other, the negative test (white) is a H2 gene type will be a transgene. (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100) (101) (102) (103) (104) (105) (106) (107) (108) (109) (110) (111) (112) (113) (114) (115) (116) (117) (118) (119) (120) (121) (122) (123) (124) (125) (126) (127) (128) (129) (130) (131) (132) (133) (134) (135) (136) (137) (138) (139) (140) (141) (142) (143) (144) (145) (146) (147) (148) (149) (150) (151) (152) (153) (154) (155) (156) (157) (158) (159) (160) (161) (162) (163) (164) (165) (166) (167) (168) (169) (170) (171) (172) (173) (174) (175) (176) (177) (178) (179) (180) (181) (182) (183) (184) (185) (186) (187) (188) (189) (190) (191) (192) (193) (194) (195) (196) (197) (198) (199) (200) (201) (202) (203) (204) (205) (206) (207) (208) (209) (210) (211) (212) (213) (214) (215) (216) (217) (218) (219) (220) (221) (222) (223) (224) (225) (226) (227) (228) (229) (230) (231) (232) (233) (234) (235) (236) (237) (238) (239) (240) (241) (242) (243) (244) (245) (246) (247) (248) (249) (250) (251) (252) (253) (254) (255) (256) (257) (258) (259) (260) (261) (262) (263) (264) (265) (266) (267) (268) (269) (270) (271) (272) (273) (274) (275) (276) (277) (278) (279) (280) (281) (282) (283) (284) (285) (286) (287) (288) (289) (290) (291) (292) (293) (294) (295) (296) (297) (298) (299) (300) (301) (302) (303) (304) (305) (306) (307) (308) (309) (310) (311) (312) (313) (314) (315) (316) (317) (318) (319) (320) (321) (322) (323) (324) (325) (326) (327) (328) (329) (330) (331) (332) (333) (334) (335) (336) (337) (338) (339) (340) (341) (342) (343) (344) (345) (346) (347) (348) (349) (350) (351) (352) (353) (354) (355) (356) (357) (358) (359) (360) (361) (362) (363) (364) (365) (366) (367) (368) (369) (370) (371) (372) (373) (374) (375) (376) (377) (378) (379) (380) (381) (382) (383) (384) (385) (386) (387) (388) (389) (390) (391) (392) (393) (394) (395) (396) (397) (398) (399) (400) (401) (402) (403) (404) (405) (406) (407) (408) (409) (410) (411) (412) (413) (414) (415) (416) (417) (418) (419) (420) (421) (422) (423) (424) (425) (426) (427) (428) (429) (430) (431) (432) (433) (434) (435) (436) (437) (438) (439) (440) (441) (442) (443) (444) (445) (446) (447) (448) (449) (450) (451) (452) (453) (454) (455) (456) (457) (458) (459) (460) (461) (462) (463) (464) (465) (466) (467) (468) (469) (470) (471) (472) (473) (474) (475) (476) (477) (478) (479) (480) (481) (482) (483) (484) (485) (486) (487) (488) (489) (490) (491) (492) (493) (494) (495) (496) (497) (498) (499) (500) (501) (502) (503) (504) (505) (506) (507) (508) (509) (510) (511) (512) (513) (514) (515) (516) (517) (518) (519) (520) (521) (522) (523) (524) (525) (526) (527) (528) (529) (530) (531) (532) (533) (534) (535) (536) (537) (538) (539) (540) (541) (542) (543) (544) (545) (546) (547) (548) (549) (550) (551) (552) (553) (554) (555) (556) (557) (558) (559) (560) (561) (562) (563) (564) (565) (566) (567) (568) (569) (570) (571) (572) (573) (574) (575) (576) (577) (578) (579) (580) (581) (582) (583) (584) (585) (586) (587) (588) (589) (590) (591) (592) (593) (594) (595) (596) (597) (598) (599) (600) (601) (602) (603) (604) (605) (606) (607) (608) (609) (610) (611) (612) (613) (614) (615) (616) (617) (618) (619) (620) (621) (622) (623) (624) (625) (626) (627) (628) (629) (630) (631) (632) (633) (634) (635) (636) (637) (638) (639) (640) (641) (642) (643) (644) (645) (646) (647) (648) (649) (650) (651) (652) (653) (654) (655) (656) (657) (658) (659) (660) (661) (662) (663) (664) (665) (666) (667) (668) (669) (670) (671) (672) (673) (674) (675) (676) (677) (678) (679) (680) (681) (682) (683) (684) (685) (686) (687) (688) (689) (690) (691) (692) (693) (694) (695) (696) (697) (698) (699) (700) (701) (702) (703) (704) (705) (706) (707) (708) (709) (710) (711) (712) (713) (714) (715) (716) (717) (718) (719) (720) (721) (722) (723) (724) (725) (726) (727) (728) (729) (730) (731) (732) (733) (734) (735) (736) (737) (738) (739) (740) (741) (742) (743) (744) (745) (746) (747) (748) (749) (750) (751) (752) (753) (754) (755) (756) (757) (758) (759) (760) (761) (762) (763) (764) (765) (766) (767) (768) (769) (770) (771) (772) (773) (774) (775) (776) (777) (778) (779) (780) (781) (782) (783) (784) (785) (786) (787) (788) (789) (790) (791) (792) (793) (794) (795) (796) (797) (798) (799) (800) (801) (802) (803) (804) (805) (806) (807) (808) (809) (810) (811) (812) (813) (814) (815) (816) (817) (818) (819) (820) (821) (822) (823) (824) (825) (826) (827) (828) (829) (830) (831) (832) (833) (834) (835) (836) (837) (838) (839) (840) (841) (842) (843) (844) (845) (846) (847) (848) (849) (850) (851) (852) (853) (854) (855) (856) (857) (858) (859) (860) (861) (862) (863) (864) (865) (866) (867) (868) (869) (870) (871) (872) (873) (874) (875) (876) (877) (878) (879) (880) (881) (882) (883) (884) (885) (886) (887) (888) (889) (890) (891) (892) (893) (894) (895) (896) (897) (898) (899) (900) (901) (902) (903) (904) (905) (906) (907) (908) (909) (910) (911) (912) (913) (914) (915) (916) (917) (918) (919) (920) (921) (922) (923) (924) (925) (926) (927) (928) (929) (930) (931) (932) (933) (934) (935) (936) (937) (938) (939) (940) (941) (942) (943) (944) (945) (946) (947) (948) (949) (950) (951) (952) (953) (954) (955) (956) (957) (958) (959) (960) (961) (962) (963) (964) (965) (966) (967) (968) (969) (970) (971) (972) (973) (974) (975) (976) (977) (978) (979) (980) (981) (982) (983) (984) (985) (986) (987) (988) (989) (990) (991) (992) (993) (994) (995) (996) (997) (998) (999) (1000) (1001) (1002) (1003) (1004) (1005) (1006) (1007) (1008) (1009) (1010) (1011) (1012) (1013) (1014) (1015) (1016) (1017) (1018) (1019) (1020) (1021) (1022) (1023) (1024) (1025) (1026) (1027) (1028) (1029) (1030) (1031) (1032) (1033) (1034) (1035) (1036) (1037) (1038) (1039) (1040) (1041) (1042) (1043) (1044) (1045) (1046) (1047) (1048) (1049) (1050) (1051) (1052) (1053) (1054) (1055) (1056) (1057) (1058) (1059) (1060) (1061) (1062) (1063) (1064) (1065) (1066) (1067) (1068) (1069) (1070) (1071) (1072) (1073) (1074) (1075) (1076) (1077) (1078) (1079) (1080) (1081) (1082) (1083) (1084) (1085) (1086) (1087) (1088) (1089) (1090) (1091) (1092) (1093) (1094) (1095) (1096) (1097) (1098) (1099) (1100) (1101) (1102) (1103) (1104) (1105) (1106) (1107) (1108) (1109) (1110) (1111) (1112) (1113) (1114) (1115) (1116) (1117) (1118) (1119) (1120) (1121) (1122) (1123) (1124) (1125) (1126) (1127) (1128) (1129) (1130) (1131) (1132) (1133) (1134) (1135) (1136) (1137) (1138) (1139) (1140) (1141) (1142) (1143) (1144) (1145) (1146) (1147) (1148) (1149) (1150) (1151) (1152) (1153) (1154) (1155) (1156) (1157) (1158) (1159) (1160) (1161) (1162) (1163) (1164) (1165) (1166) (1167) (1168) (1169) (1170) (1171) (1172) (1173) (1174) (1175) (1176) (1177) (1178) (1179) (1180) (1181) (1182) (1183) (1184) (1185) (1186) (1187) (1188) (1189) (1190) (1191) (1192) (1193) (1194) (1195) (1196) (1197) (1198) (1199) (1200) (1201) (1202) (1203) (1204) (1205) (1206) (1207) (1208) (1209) (1210) (1211) (1212) (1213) (1214) (1215) (1216) (1217) (1218) (1219) (1220) (1221) (1222) (1223) (1224) (1225) (1226) (1227) (1228) (1229) (1230) (1231) (1232) (1233) (1234) (1235) (1236) (1237) (1238) (1239) (1240) (1241) (1242) (1243) (1244) (1245) (1246) (1247) (1248) (1249) (1250) (1251) (1252) (1253) (1254) (1255) (1256) (1257) (1258) (1259) (1260) (1261) (1262) (1263) (1264) (1265) (1266) (1267) (1268) (1269) (1270) (1271) (1272) (1273) (1274) (1275) (1276) (1277) (1278) (1279) (1280) (1281) (1282) (1283) (1284) (1285) (1286) (1287) (1288) (1289) (1290) (1291) (1292) (1293) (1294) (1295) (1296) (1297) (1298) (1299) (1300) (1301) (1302) (1303) (1304) (1305) (1306) (1307) (1308) (1309) (1310) (1311) (1312) (1313) (1314) (1315) (1316) (1317) (1318) (1319) (1320) (1321) (1322) (1323) (1324) (1325) (1326) (1327) (1328) (1329) (1330) (1331) (1332) (1333) (1334) (1335) (1336) (1337) (1338) (1339) (1340) (1341) (1342) (1343) (1344) (1345) (1346) (1347) (1348) (1349) (1350) (1351) (1352) (1353) (1354) (1355) (1356) (1357) (1358) (1359) (1360) (1361) (1362) (1363) (1364) (1365) (1366) (1367) (1368) (1369) (1370) (1371) (1372) (1373) (1374) (1375) (1376) (1377) (1378) (1379) (1380) (1381) (1382) (1383) (1384) (1385) (1386) (1387) (1388) (1389) (1390) (1391) (1392) (1393) (1394) (1395) (1396) (1397) (1398) (1399) (1400) (1401) (1402) (1403) (1404) (1405) (1406) (1407) (1408) (1409) (1410) (1411) (1412) (1413) (1414) (1415) (1416) (1417) (1418) (1419) (1420) (1421) (1422) (1423) (1424) (1425) (1426) (1427) (1428) (1429) (1430) (1431) (1432) (1433) (1434) (1435) (1436) (1437) (1438) (1439) (1440) (1441) (1442) (1443) (1444) (1445) (1446) (1447) (1448) (1449) (1450) (1451) (1452) (1453) (1454) (1455) (1456) (1457) (1458) (1459) (1460) (1461) (1462) (1463) (1464) (1465) (1466) (1467) (1468) (1469) (1470) (1471) (1472) (1473) (1474) (1475) (1476) (1477) (1478) (1479) (1480) (1481) (1482) (1483) (1484) (1485) (1486) (1487) (1488) (1489) (1490) (1491) (1492) (1493) (1494) (1495) (1496) (1497) (1498) (1499) (1500) (1501) (1502) (1503) (1504) (1505) (1506) (1507) (1508) (1509) (1510) (1511) (1512) (1513) (1514) (1515) (1516) (1517) (1518) (1519) (1520) (1521) (1522) (1523) (1524) (1525) (1526) (1527) (1528) (1529) (1530) (1531) (1532) (1533) (1534) (1535) (1536) (1537) (1538) (1539) (1540) (1541) (1542) (1543) (1544) (1545) (1546) (1547) (1548) (1549) (1550) (1551) (1552) (1553) (1554) (1555) (1556) (1557) (1558) (1559) (1560) (1561) (1562) (1563) (1564) (1565) (1566) (1567) (1568) (1569) (1570) (1571) (1572) (1573) (1574) (1575) (1576) (1577) (1578) (1579) (1580) (1581) (1582) (1583) (1584) (1585) (1586) (1587) (1588) (1589) (1590) (1591) (1592) (1593) (1594) (1595) (1596) (1597) (1598) (1599) (1600) (1601) (1602) (1603) (1604) (1605) (1606) (1607) (1608) (1609) (1610) (1611) (1612) (1613) (1614) (1615) (1616) (1617) (1618) (1619) (1620) (1621) (1622) (1623) (1624) (1625) (1626) (1627) (1628) (1629) (1630) (1631) (1632) (1633) (1634) (1635) (1636) (1637) (1638) (1639) (1640) (1641) (1642) (1643) (1644) (1645) (1646) (1647) (1648) (1649) (1650) (1651) (1652) (1653) (1654) (1655) (1656) (1657) (1658) (1659) (1660) (1661) (1662) (1663) (1664) (1665) (1666) (1667) (1668) (1669) (1670) (1671) (1672) (1673) (1674) (1675) (1676) (1677) (1678) (1679) (1680) (1681) (1682) (1683) (1684) (1685) (1686) (1687) (1688) (1689) (1690) (1691) (1692) (1693) (1694) (1695) (1696) (1697) (1698) (1699) (1700) (1701) (1702) (1703) (1704) (1705) (1706) (1707) (1708) (1709) (1710) (1711) (1712) (1713) (1714) (1715) (1716) (1717) (1718) (1719) (1720) (1721) (1722) (1723) (1724) (1725) (1726) (1727) (1728) (1729) (1730) (1731) (1732) (1733) (1734) (1735) (1736) (1737) (1738) (1739) (1740) (1741) (1742) (1743) (1744) (1745) (1746) (1747) (1748) (1749) (1750) (1751) (1752) (1753) (1754) (1755) (1756) (1757) (1758) (1759) (1760) (1761) (1762) (1763) (1764) (1765) (1766) (1767) (1768) (1769) (1770) (1771) (1772) (1773) (1774) (1775) (1776) (1777) (1778) (1779) (1780) (1781) (1782) (1783) (1784) (1785) (1786) (1787) (1788) (1789) (1790) (1791) (1792) (1793) (1794) (1795) (1796) (1797) (1798) (1799) (1800) (1801) (1802) (1803) (1804) (1805) (1806) (1807) (1808) (1809) (1810) (1811) (1812) (1813) (1814) (1815) (1816) (1817) (1818) (1819) (1820) (1821) (1822) (1823) (1824) (1825) (1826) (1827) (1828) (1829) (1830) (1831) (1832) (1833) (1834) (1835) (1836) (1837) (1838) (1839) (1840) (1841) (1842) (1843) (1844) (1845) (1846) (1847) (1848) (1849) (1850) (1851) (1852) (1853) (1854) (1855) (1856) (1857) (1858) (1859) (1860) (1861) (1862) (1863) (1864) (1865) (1866) (1867) (1868) (1869) (1870) (1871) (1872) (1873) (1874) (1875) (1876) (1877) (1878) (1879) (1880) (1881) (1882) (1883) (1884) (1885) (1886) (1887) (1888) (1889) (1890) (1891) (1892) (1893) (1894) (1895) (1896) (1897) (1898) (1899) (1900) (1901) (1902) (1903) (1904) (1905) (1906) (1907) (1908) (1909) (1910) (1911) (1912) (1913) (1914) (1915) (1916) (1917) (1918) (1919) (1920) (1921) (1922) (1923) (1924) (1925) (1926) (1927) (1928) (1929) (1930) (1931) (1932) (1933) (1934) (1935) (1936) (1937) (1938) (1939) (1940) (1941) (1942) (1943) (1944) (1945) (1946) (1947) (1948) (1949) (1950) (1951) (1952) (1953) (1954) (1955) (1956) (1957) (1958) (1959) (1960) (1961) (1962) (1963) (1964) (1965) (1966) (1967) (1968) (1969) (1970) (1971) (1972) (1973) (1974) (1975) (1976) (1977) (1978) (1979) (1980) (1981) (1982) (1983) (1984) (1985) (1986) (1987) (1988) (1989) (1990) (1991) (1992) (1993) (1994) (1995) (1996) (1997) (1998) (1999) (2000) (2001) (2002) (2003) (2004) (2005) (2006) (2007) (2008) (2009) (2010) (2011) (2012) (2013) (2014) (2015) (2016) (2017) (2018) (2019) (2020) (2021) (2022) (2023) (2024) (2025) (2026) (2027) (2028) (2029) (2030) (2031) (2032) (2033) (2034) (2035) (2036) (2037) (2038) (2039) (2040) (2041) (2042) (2043) (2044) (2045) (2046) (2047) (2048) (2049) (2050) (2051) (2052) (2053) (2054) (2055) (2056) (2057) (2058) (2059) (2060) (2061) (2062) (2063) (2064) (2065) (2066) (2067) (2068) (2069) (2070) (2071) (2072) (2073) (2074) (2075) (2076) (2077) (2078) (2079) (2080) (2081) (2082) (2083) (2084) (2085) (2086) (2087) (2088) (2089) (2090) (2091) (2092) (2093) (2094) (2095) (2096) (2097) (2098) (2099) (2100) (2101) (2102) (2103) (2104) (2105) (2106) (2107) (2108) (2109) (2110) (2111) (2112) (2113) (2114) (2115) (2116) (2117) (2118) (2119) (2120) (2121)

more prevalent. There will, of course, be other weaker loci, which determine transplantation antigens.

Let us look at the histocompatibility points of the mouse, the other familiar rodent of all species at this time (Fig. 1). The complexity is staggering. It is known that if two strains of mice are identical at the strongest locus, H-2, it is extremely difficult to test cytotoxic intensity between these strains, but it is much easier to define, likewise, if transplanted tissue. If, however, two strains differ at H-2, transplanted tissue dies; circulating cytotoxic and agglutinating antibodies and the so-called H-2 specificities have been elucidated by careful serological studies on such mixtures (Fig. 2). Furthermore, the specific antibodies appear to a particular extent? I do not wish to speculate here on whether the observed appearance is a reflection of the original strength of different H-2 specificities or whether it is merely a quantitative difference of specificities in the material used to stimulate. Suffice it to say that in transplanted contexts one becomes more polyspecific.

Let us now turn to man. As I have said, the best description is that there is one strong histocompatibility locus which has a few 3 to 5 alleles or pseudo

H-2 SPECIFICITIES IN ANTISERA

H-2 Specificities present

HOUSE STRAIN A 1 2 4 5 7

HOUSE STRAIN B 2 3 5 6

A anti B antiserum has specificities 3 & 6

B anti A antiserum has specificities 1,4 & 7

Fig. 1. Mouse H-2 loci. Antisera to Antigenicities (Table 1, Strains A and B) produce antibodies (serum) against one shared H-2 specificity.

order. By analogy with the second rule mentioned, therefore, it is not unreasonable to expect that interactions between individuals and lymphoid tissues which reflect differences at this strong level. We do not yet know that this grade between human individuals does exist on an individual level and that an interaction is produced with further grade the specificity of the reactant *peritonsillar* lymphoid in that case, individuals must have a random population used to supply target cells in the at least early. Sets from women having had multiple pregnancies or individuals who have had multiple abortions are therefore likely to be polygenic. Early work after skin grafting should however enable us to determine human histocompatibility types in greater detail. It is important to realize nevertheless that the order in differences in specificity at the strong level. Again, by analogy with animal model systems there are probably the ones which will then remain as in transplant surgery, some differences at other loci may conceivably be overcome by drug therapy.

What then are the in vitro assays available? Almost all assays are based on immunocytes or lymphocytes as target cells. This stems from the reasonable belief that these cells carry all of the immunoreactivity components of an individual. The more assays obtained lymphocytes are believed not to meet this standard but maximal interest, i.e. they are probably deficient or extremely low in their own use of some questions.

Agglutination assays have these problems but remain work on two related grounds. 1st) testing of responses and 2nd) the subjective nature of interpretation. Ideally for greater quantitative and more detailed analysis of humoral antibodies and responses in systems, studies the principal requirements are an easily obtained homogeneous suspension of cells which have a complex spectrum of individual specific antigen and which reflect quantifiable inhibition on lymphocytes. These requirements have been closely approached in our studies in the use of peripheral blood lymphocytes which are labeled with Chromium 51. The release of radioisotope affected by specific serum and complement is used to determine the extent of lysis.

We have now in preparation of target cells. Separation of lymphocytes from other leukocytes, platelets and the majority of erythrocytes is not a difficult problem but complete removal of erythrocytes from lymphocyte preparations has presented difficulties which have taken considerable time to resolve. Differentiated lymphoid cells with water proof are damaging to the lymphocytes. However an alternative to erythrocytes prepared in another species appears very promising. At first a rabbit anti human erythrocyte serum was used. In the presence of guinea pig complement the serum was rapidly cleared the erythrocytes and the lymphocytes obtained after such treatment appeared increasingly unaltered. The lymphocytes were then labeled by incubation with Chromium 51. serum activity was removed by washing and aliquots of cells were suspended in dilutions of human transferrin or rabbit complement (rabbit complement is more efficient than guinea pig complement) and a readily prepared for lymphocyte lysis. After a period of incubation, lysis was determined by addition of Versene (EDTA) the cell protein was centrifuged and aliquots released from cells was determined in aliquots

of suspension. The same problem always arose however, viz. that of high content rubbers, e.g., when cells were prepared in rabbit complement, since there was high content of rubbers under conditions where other work had shown such complement to be not toxic for human cells. The complement had of course been adsorbed with human cells before use. The problem could be overcome by using lower levels of rabbit complement but this decreased the sensitivity to sensitivity of 50-100%.

Further investigation showed that the trouble lay in the rubbers and human erythrocyte serum used in the preparation procedure. Small amounts of this appear to attach to the lymphocytes, presumably because of cross-reacting specificities between them and erythrocytes. The prolonged second incubation of labeled cells and subsequently to increase sensitivity to human serum serum caused too high a release of isotope at controls incubated in complement alone. In the absence of complement, no release of the cells were partially soluble.

We have recently overcome this problem by utilizing the known stability of chicken antibodies to treat lymphocytes with any form of complement except chicken complement. The procedure is as follows. The lymphocyte/erythrocyte mixture is treated with chicken anti-human erythrocyte serum but without addition now of any complement. The erythrocytes agglutinate and settle out. Any small residual erythrocyte agglutinins can be removed by a polyclonal total rabbit anti-chicken anti-serum to remove polyclonals. Now the lymphocytes so obtained may have a little chicken antibody on their surface, but when they will ultimately be suspended in rabbit complement, with antibody against mouse lymphocytes and therefore any lymphocytes that are a result of sensitivity to the human serum serum under test. We did originally plan to pretreat lymphocytes with the chicken anti-serum and chicken complement, but the latter's efficiency in this regard was so poor that it was decided to resort to the anti-serum, agglutinating simply to remove the desired result. The method thereby involved possesses the advantage that complement is not required to be present during lymphocyte preparation. Using lymphocytes prepared in the above manner it has been possible to obtain a lymphocyte suspension and rabbit complement as precise as that of the well documented hemolytic system using sheep erythrocytes. Foxman antibodies and guinea pig complement. These show for cell preparation and the lymphocytes are given in Figs. 3 and 4.

The quantities of lymphocytes required are sufficiently small that 10 mL of peripheral blood provides enough cells to obtain hundreds of different suspensions. Results can be successfully read at any time later convenient to the investigator within the lifetime of the isotope, the half-life of ^{51}Cr being 33 days. Finally, the results are objective, precise and reproducible. Lymphocytes prepared in above have recently been stored in liquid nitrogen at -196°C for 12 days. Subsequent thawing, labeling, and use in an assay has shown these stored cells to be equally ready chemical with freshly prepared lymphocytes. The storage of standardized cells of a known immunophenotypic spectrum offers many obvious advantages in the tissue typing investigation.

In the particular case of histocompatibility typing for use in skin grafting of



Fig. 1. Lymphocyte Preparation from Peripheral Blood

Lymphocyte Culture Assay

- 10^6 lymphocytes isolated at $10^4 \times g$ for 10 min in 0.1% DMSO, washed cell twice/centrifuged, resuspended in FCS/EDTA containing 0.1–0.5% ^{125}I
- cells washed in 0.1% FCS/EDTA, resuspended in fresh concentrated aliquot contains 1×10^4 cells
- aliquots of isolated washed cells added to cultures at 100,000 cells in depleted fetal complement
- supernatants incubated at 37°C for 1 hour with gentle rotation
- trip is terminated by addition of 0.1M EDTA, cells containing 0.1% ^{125}I supernatants centrifuged and aliquots of supernatants assayed for radioactivity

Fig. 2. The Lymphocyte Cytotoxic Assay

birds, even, we are of course, faced with major problems. Immunosuppression cannot be used because of increasing the danger of infection. Theoretically there may one would require complete matching in all histocompatibility loci. Strong or weak, before a histograft would survive satisfactorily. Thus requirements would certainly present an almost insuperable problem but perhaps the picture is not as black after all. More selective means of immunosuppression could improve the situation so that one would require only to search for strong histocompatibility markers. Current research on antilymphocyte serum³ seems promising. But perhaps the expected partial collapse of immune capability following virus 'inoculation' would lead to prolonged survival of histografts in partially matched situations.

In any event protection of donor skin which is genetically identical with the recipient in strong histocompatibility antigens cannot but be valuable. At least the prolonged survival to be expected would enable further stripping of needed autografts.

REFERENCES

1. Spencer, H. (1960). *Transplantation* 4, 254.
2. Maynard, J. E., Glicksman, R. and Rasmussen, R. (1960). *Transplantation* 3, 534.
3. Gershenson, J. E., Baruch, G. (1961). *Transplantation* (Ed.) 29, 4.
4. Helyar, W. P. and Lillie, P. (1956). *Rept. Survey for a summer*. Spring Meeting, London.
5. Spencer, H. W. and Spencer, J. H. (1960). *Arch. coll. Surg.* 95, 75.

HYPOTHERMIA IN THE TREATMENT OF ACUTE BURN INJURY

By Doctor Monica Black, Medical Burns Centre,
Queen Victoria Hospital, East Grinstead

In this country one of the earliest references to cooling in the treatment of burn injury was made more than 150 years ago by James Harter, House Surgeon to St. Bartholomew's Hospital, London, who reported rapid and sustained relief from pain, reduced severity of tissue damage and reduced swelling when wetting or cold water packs in the treatment of burn injury. I had thought this might have been the earliest written reference in this country to cooling in the treatment of burn injury. However, in one of the volumes, opened for inspection in the Museum of the Royal Naval Hospital, Harter, by Professor Watt, I saw a reference 130 years earlier to what are described as 'effluviations' in the treatment of burn injury. This cooling has been in and out of vogue in the treatment of burns, but at least 150 years in this country. More recently in the United States, Temple Fay applied chopped ice in large areas burns of the skin and found that this controlled pain and reduced shock and that healing, although slow, increased in a plastic case that did not show tendencies to contracture with desloughing.

In 1946, working in the Journal of Physiology, Crutcher described his classic study in rabbits, goats, and dogs carried out in the Research Establishment, Farnham. I should like to describe this study in some detail. Crutcher found that dead loss from a scalded limb immersed in water at 15°C for 24 hours was approximately three times that from a limb immersed in ice water for a similar period. Even after 2 hours at 15°C there was still pain from subsequent cooling. Scalds of the legs causing sufficient fluid loss to produce circulatory collapse and death at normal temperatures were associated with survival when the limbs were kept cold. Haematocrits in haemoglobin concentrations and decrease in plasma proteins were considerably greater when scalded limbs were treated at 15°C than at 0°C and more plasma or serum was required to maintain haemoglobin concentrations at pre-burn levels in scalded than in cooled animals — an associated osmotic imbalance fluid was presumably lost via the burn tissues and further replacement was required to maintain haemoglobin at the pre burn level. When the scalded limbs were cooled the effect of the initial fluid loss was maintained throughout the period of cooling. Lymph flow and lymph protein from scalded parts of dogs were also reduced when the parts were immersed in water at 15°C instead of at 0°C.

Crutcher found that when pain from cooling was discontinued after 24 hours, increase in haemoglobin concentrations still occurred, indicating further fluid loss, but when cooling was maintained for 48 hours, this did not occur. This was taken to indicate that to prevent increase in fluid volume in fluid loss and fall in plasma volume following cessation of cooling, this had to be maintained for at least 48

hours. This finding has been confirmed more recently in the United States in patients and in animals treated with local cooling following burn injury.

It was pointed out by Olmgren (1979) that water at 10-20°C is widely used by lay people as first aid in the treatment of burn injury. Working at the University of Göttingen, Olmgren produced 30 per cent surface burn scalds in some hundreds of rats exposed to water at 35°C for 30 seconds. Mortality was 60-90 per cent, and in surviving animals degeneration of skin and underlying tissue was still progressive at three to four weeks post-burn. In animals treated by immediate post burn immersion in water at 25-30°C for as little as 1-40 minutes, mortality fell to less than 10 per cent, progressive degeneration of skin and underlying tissues was stopped and healing was greatly improved. When post burn cooling was delayed for up to 45 minutes, there was still a considerable reduction in mortality and healing was greatly improved as compared with untreated animals. Olmgren showed that in untreated animals skin temperature until several minutes to fall to normal following scalding, whereas in cooled animals skin temperature fell to 35°C within twenty minutes, thereby greatly reducing the exposed time of tissues to heat injury. He suggested relief from pain and reduced shock in burn patients treated with local cooling, and recommended cold water therapy as first treatment for burns and scalds.

Altogether the claims made for cooling in the treatment of burn injury have been considerable. Papers published during the past 5-10 years mostly from the United States, refer to decrease in mortality, immediate relief from pain, diminished tissue damage, reduction in fluid loss, decrease in effusions, improved healing, decrease in scar tissue and a reduced requirement for skin grafting in burn patients, and animals treated with local applications of ice, with ice packs, or by immersion in cold water. Now all this of course amounts to a pretty lavish claim.

It is probable, however, that much of it can be attributed to fairly readily. Thus pain relief is probably dependent on cutaneous heat transfer and cutaneous nerve block. The capacity of the skin for heat transfer is considerable. In a paper published last year by Hardy *et al.* (1978) in the *Journal of Applied Physiology*, based on observations made during skin heating in volunteers, maximal thermal gradients in the superficial layers of the skin during the first 0.1-0.2 seconds of immersion were of the order of 40°C/m, falling to 4°C/m during the first five seconds. Since the temperature threshold for pain due to heat is in the region of 43-44°C it will readily be appreciated why application of ice or cold water to the skin producing a profound fall in skin temperature within a few seconds, will result in the immediate relief from pain that has been reported by many observers, and is probably the most dramatic of the effects produced by surface cooling in the treatment of burn injury, particularly of children. Then comparatively warm water, Olmgren thought up to 30°C, will reduce skin temperature to below the threshold for pain due to heat. Cold water, by producing partial or complete cutaneous nerve block, as well as skin cooling, suppresses pain due to nerves other than heat for example that resulting from tissue injury.

The same factor, namely capacity of skin cooling, probably accounts for reduction in tissue injury in burns treated immediately by cooling, either by the

muscle mass, *Myoglobin* is typically reduced to below the threshold for heat injury. In Obergren's experiments, decreased myoglobin reduced tissue damage and improved healing, resulting from even brief post-burn cooling, as noted recently (10) in trials at Rochester, Canada. There is little doubt from these experiments that a feasible proposition is that tissue damage or tissue injury develops in the postburn period.

The cause of unwanted postburn cooling therefore is that a volume, with temperature below the threshold for pain and for tissue injury due to heat.

The fluid mass that made for cooling is reduction in local volume and fluid loss. This is important not only because, immediate requirements are thereby reduced but also because, extension of tissue damage resulting from local fluid loss into the tissue, leading to tissue desiccation, compression, hypoxia, necrosis and further systemic risk, particularly during the first 24 hours is also reduced. Tissue cooling probably produces this effect by vasoconstriction and by fluid mass for fluid-induced vasoconstriction by reducing blood flow below the volume of fluid necessary in the periphery. Permeability of vessels at the site of injury may also be reduced. In this way less fluid is available in the site of burn injury, and of this less can escape owing to reduced permeability. It seems likely that this transfer of fluid from the interstitium to the intracellular processes, a known effect of cooling might also contribute to reduction in edema. Other factors claimed for cooling such as reduction in infection and in skin grafting requirements, are probably secondary to limitation of tissue injury, though compression, dependent desiccation, or bacterial multiplication might also be important in reducing infection.

Whatever the principles involved, they again little doubt from the injury or pain made during the past 25 years that the fastest response to cooling is beneficial and that cooling might have a place in the treatment of severe burn injury.

In most circumstances, it is a first aid measure, enabling treatment to begin almost immediately post burn. Using ice or cold water compresses and burlap, the interval between injury and commencement of treatment in hospital is passed during which extension of tissue damage occurs. Water cooling has the advantage of being easy to apply and quickly to use in comparison, usually readily available, and has few serious disadvantages.

It is doubtful whether there is any more efficient first aid measure available in the present time, combining simplicity and availability with effectiveness, for use in the treatment of burn injury at home or at industry. In most burn injury when a slight difference be possible to treat only those subjects having a better than average chance of survival (young age group, small area burnt) availability of local cooling might mean the difference between life and death or gross and moderate injury for many patients. Certainly in the USA, where to set up full scale burn centers, many more people could be given an initial treatment with liquid cooling. In this country age many is suitable for use during most of the year. One hundred and sixty years ago James Clark and NATHAN Walpole (11) and NATHAN (12) (not mentioned) to reduce the temperature of warm water, and it should

not be limited, an ingested fluid-sucking device would when this is required at an emergency.

Once in hospital, fluid loss can be replaced by transfusion and fluid cooling maintained as necessary for 24-48 hours using cooled fluids saline or Ringers solution to limit further tissue injury and fluid loss.

In patients from injury, prolonged cooling might be unnecessary. The problem of maintaining efficient surface cooling over a large area from a considerable and replacement of water at 40-45°C might produce discomfort, shivering, increase in oxygen demand and fall in body temperature. In this situation whole-body hypothermia at 33-35°C for 4-6 days might be preferable to prolonged local cooling. Patients are comfortable and nursed at this temperature, shivering is controlled. Blood volume is physiologically reduced and blood flow to the periphery is diminished. Memory of poikilothermic hypothermia is not regained following return to normal body temperature and thus, besides other possible benefits from cooling, there might be some lessening of the psychological trauma associated with extensive burn injury. As the patient takes prolonged whole-body hypothermia carries a mortality of not less than 10 per cent and should not be used except for extensive burn injury when the advantages to be gained might justify this risk. For less severe injury local cooling should be used.

Summarizing there is evidence that local surface cooling might be expected to control pain and limit tissue injury in the immediate post burn period, providing effective and readily available devices that respond to the still to administer to reduce systemic fluid loss, limit tissue injury and fall in plasma volume during the period of expected fluid loss, i.e. particularly during the first 24-48 hours post burn, and possibly to reduce infection and the need for skin grafting and to result in improved healing in the late post burn period.

REFERENCES

- COCHRAN, P. C. (1966) *J. Applied Physiol.*, **20**, 751.
KILPATRICK, J. (1959) *The Burns in the Home*, in: *Effect of Fire on the Human Body* (London: Ciba).
FRY, T. (1956) *J. Neurology*, **131**, 229.
HARRIS, J. D., MICHENER, J. A. L., HERRICK, R. T. (1956) *Am. J. Surg.*, **92**, 1034.
GROSVENOR, G. J. (1955) *Brit. J. Plast. Surg.*, **11**, 100.

Abstract

PRIMARY CARCINOMA DUPLICATION ASSOCIATED WITH TYLOSIS

By Virginia Combs and David Haines, MD

A normal Dickard Singer aged 65 presented in August, 1964 with pain in the hypochondriacal and mid lumbar regions, irregularity in excretion, and weight loss. He was febrile, and died five days in shock of large intestine cancer, possibly primary.

He was found to have been enlargement of the liver in the mid lobe and hyperplasia of the polyps and the colon, which he stated was present "from birth". A similar condition of the skin was present in his mother and in one first cousin on her side of the family. Clinical laboratory showed hyperkalemia, metabolic acids which were increased. Gastroscopy and barium studies showed no abnormality. The only abnormal liver function test was serum alkaline phosphatase raised to 15 Kanc. Armstrong units per 100 ml. (173 International Units per Liter).

The largest biopsy showed squamous carcinoma and the patient returned for

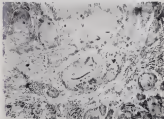


Fig. 1. Carcinoma of the colon.

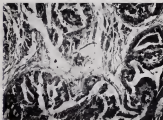


Fig. 1. Larva of *Leurogaster setacea*.

on itself and the primary suboesophageal part of the branchial apparatus of the larva (see Figs. 1-3 and 2). A symmetrical pattern of the oesophagus.

There was thus an established continuity of primary oesophageal structures of the upper respiratory tract with primary suboesophageal parts (oesophagus, heart and the coelomic cavity) of the larva and the embryo.

Discussion

From the first contact with this parasite, it became evident, although difficult to prove, that it seemed reasonable to believe that there is a high probability of increased ability to develop separate, continuous, suboesophageal structures. Larva of *Leurogaster setacea* (Howe) Evans et al. (1954) gave origin to the primary suboesophageal structures (heart, liver, and oesophagus) of the larva (continuity of oesophagus was not investigated more, despite its significance in phylogenetic findings, but there was no direct occurrence of continuous suboesophageal structures) but it established any link with the *Leurogaster* larvae.

There was no trace of *Leurogaster* in the larva of the *Leurogaster* (larva) and only one rather doubtful case of *Leurogaster* of the stomach.

Stiles and Wilson (1946) described a white, fleshy larva, which was pale, and had numerous structures of the oesophagus and another a young man, underwent operation for congenital structure of the oesophagus. The lower end of the

carcinoma was found in 100% of the 10 patients. During the reported epidemic, almost 40% of the 1000 men serving in Vietnam

Multiple primary carcinoma was reported by Cameron *et al* (1961) in 100% of cases of their area and 74% per cent of their control (neutropen) showed less than one primary tumour (or just over 1% of all neutropen). Moore and Althaus (1964) quoting Lewis give the population incidence of typhus as 1 in 40,000 in Northern Ireland so the neutropen incidence will probably be of this order.

The range of various disorders on post-neutropen transmission depends upon the nature of the neutropen, the rate of the neutropen to control deaths and the personal response of the workers involved, as well as upon their true incidence. This was discussed in relation to primary tumours of the liver by Ellington *et al* (1963) and Moore (1964) and similar considerations must apply to carcinoma melanoma, especially where there has been widespread infection.

Primary carcinoma of the larynx usually runs a long course and is hardly ever accompanied by distant metastases and would therefore tend to be one of a pair of primary carcinomas. There is no case of carcinoma of the larynx among the neutropen listed by Cameron *et al* (1961) though local conditions probably affect the incidence of "spontaneous" tumours in our neutropen area.

The picture described has a very combination of disorders and as far as is known this is the first description of primary carcinoma duplex associated with typhus, a harmless, self-limiting disorder which sometimes may have a similar appearance (Hewitt-Turner *et al* 1954).

Summary

Primary squamous carcinoma of the larynx and primary adenocarcinoma of the stomach with metastases were diagnosed in a patient suffering from tropical hyperleucocytosis of the feet and hands (Typhus). Four unusual reactions in observed.

I wish to thank Surgeon Vary Adjunct E. D. Caldwell C.B. Q.H.P. for permission to publish this report and Surgeon Commander J. S. Smith and Surgeon Commander F. F. Penson who cared for this patient Dr J. W. Lambell (Honorary Consultant in Clinical Haematology at the Royal Navy) kindly examined the haemological preparations, and encouraged publication.

REFERENCES

- LEWIS J. Melrose, Lyons A. and Lutz H. S. (1961) *J. Clin. Path.* 14, 124.
KAMMERER E. D., MILLER D. G. and JEWELL H. (1961) *Ann. Med.* 1, 100.
MOORE D. D. (1964) *J. Int. Med.* 176, 1-15.
HARRIS P. G., W. MILLERSON, E. M. GUNTER, C. A. and TURNER P. M. (1964) *Quart. J. Med.* 27, 427-433.
SMITH J. and ALLISON P. B. (1958) *Cancer* 1, 25.

A SALMONELLA EPIDEMIC IN A SMALL SHIP

By Surgeon Lieutenant L. G. Moore, RN

Introduction

It must be an uncommon event today for even H.M. Ships to be faced with a widespread epidemic of salmonella infection whilst at sea, a remote part of the world. H.M.S. *Corndale* was in such a position when at the Seychelles between 28th June and 7th July 1966. She had gone there post haste in response to the Government call for military aid to assist civil order.

Signs and onset of infection

The organism *Salmonella anatum* was carried by a cook who worked in the general mess galley. On Saturday 26th June he returned and during the meal that was eaten for Sunday's main meal in the ship's mess room. There being no adequate refrigeration facilities in the galley the meat was left overnight in a temperature of between 50-60° F. The next day it was reheated to mouth temperature just before serving. The food that was not consumed in Sunday's main meal was wasted for supplementary salads and sandwiches that were served on Sunday evening and Monday.

The epidemiology was arrived at as a result of interviewing all those affected by the organism. The common feature being that they had all eaten Sunday's main meal. Stool cultures of the main ship's company showed that only two crew had handlers had positive results. The other foodhandler worked in the Officers' galley and took no part in the preparation of the ship company's Sunday meal. Moreover he had no contact with the organism whereas the suspected cook had an extremely high titre there being dense fecundation in a sample of his stool on isolation of H and O antigens of the organism after only a few hours of incubation. These investigations were carried out in the Seychelles during the first week of the epidemic.

During the first three days (Monday 28th Wednesday 30th) the ship had no Medical Officer attached. However the Landing Medical Assistant¹ was concerned about one of the cases that presented on the first day as he had a high leukocyte count (104 F) and was passing many stools with fresh and altered blood. He sent a stool for culture which that day and hospitalized the man on the following day. A young man with similar gastro-synopsis presented on Tuesday and was hospitalized the next day. By this time it was apparent that about 20 of the ship's company were suffering from similar symptoms and medical aid was requested from H.M.S. *Gloucester*.

¹ M.A. 50. *Feldschirze* — Commander in Chief's Commissioner (Medical Staff) Command.

- (ii) Prophylaxis with antibiotics of the kind usually used is considered but deemed undesirable as the organism was sensitive to all tetracyclines and ampicillin only. No ampicillin was available at that time, and chloramphenicol was thought to be too dangerous without proper control. However as R.S.I. MacIntyre dropped 7500 capsules of ampicillin on Sunday 28th June and prophylaxis with 150 mg q.i.d. was started.
- (iii) Owing to the shortage of doctors in the Seychelles the Naval Medical Officer undertook to accept clinical responsibility for the patients, solely and supported the voluntary quarantine.

An interesting problem arose as HMS Gorda had been ordered to land a detachment of Royal Marines. At that stage it was not established whether the syndrome had been brought from abroad or not, and consequently the health hazards of shore leave and landing the Royal Marines arose. The local medical authorities took early action: that Mahéville had not caused any morbidity ashore and that the outbreak was probably indigenous to HMS Gorgon. However all members of Gorda's ship's company received T.A.B. inoculation and the health provisions were relaxed. Shore leave was granted therefore and everybody was warned not to eat or drink the local water. There were no ill effects as a result of this regime. Although those who gained the warning shots started consumption on top of T.A.B. inoculation found their capacity severely diminished.

There were no fresh clinical cases after Friday 24th June, but the results of chest cultures on the whole ship's company showed that there were about 25 men on board with positive results who had suffered no clinical effect. Consequently two combinations were drawn:

- (a) That the whole ship was infected and as a result everybody was treated with ampicillin 250mg q.i.d. from Monday 17th June.
- (b) That as a result of the severity of the situation, the whole ship would have to be cleared by aerial dust refuges and secondary reserves retained and treated. Signals to this effect were sent to the Principal Medical Officer Middle East and advice was received that this should be done in April that the clinical effects had subsided and the ship could sail.

On 1st July 1966 all the patients ashore had been discharged to be treated except one who still was ill and had a marked macrocytosis. The ship then sailed for Aden, prophylaxis by ampicillin being continued until July 24th.

Clinical Notes

It appeared that the incubation period for the organism was between 12 and 48 hours which is in keeping with that of the Salmonella group of organisms. Although cases obviously differed in the degree of severity, a typical case may be described. The patient would start to feel unwell in the morning or evening with headache and vague abdominal discomfort. About eight hours afterwards he would begin to have profuse hot watery diarrhoea, occasionally dark, or ashcol and sometimes black and occasionally accompanied by mucus. At the same time he would start to feel queasy or with loss of appetite. Fatigue, headache and occasionally photophobia. He would also have a colicky abdominal pain.

On investigation the patient would show a temperature of between 102-104°F

look small and have a dry coated tongue. Examination of the abdomen would reveal a tender segment colon, sometimes dilated with gas.

A stool culture grew *Salmonella* and a typical blood picture would be:

Hb.	14.5 G
WBC	5,000 per cu. mm.

Differential White Cell Count

Neutrophils	42%
Eosinophils	0%
Lymphocytes	47%
Leucocytes	52%
Monocytes	3%

Widal tests done on all specimens proved negative because of T.A.B. sensitivity. Some patients had no rose and others H 1:128, S 1:128 there being no correlation between these results and the length of illness.

Treatment

Initially all cases were treated with but not as isolation, light diet, copious fluids with bicarbonate added and chloramphenicol capsules 150 mg. q.i.d. Also prescribed were Muc. Kallin or Morph. tabs. Prebenzylase 15 me. i.d. and various vitamins. When suspension became available the chloramphenicol was stopped (after 4 days of treatment) and paracetamol given as doses of 150 mg. q.i.d.

The average duration of illness was 5.7 days. All patients made a good recovery once treatment was started on Thursday 13rd June.

Comments on Aden for 31st July 1960

Having agreed to close the shop and meet any secondary carriers in Aden, it was decided that the shop's company should be disarmed and remained silent. Winston-Lewis Edwards, home of the Prince of Wales Own Regiment of Yorkshire was made available as the regiment was up country.

The shop's company of 200 tons remaining in Bevelhofen was classified as follows:



- TYPES A** Those who had a clinical infection and were hospitalized in Singapore.
- TYPES B** Those who had no overt clinical symptoms but had a positive stool in the Singapore.
- TYPES C** Those present in the ship at the time but having no clinical or bacteriological signs of infection.

Stools were collected twice a day and sent to the Pathology Laboratory at Raffles Medical Research Hospital. Here a technique appeared that the Medical Research Council's recommended method of isolating *Salmonella* was impracticable as the laboratory could then only handle 10 stools per day. After the whole ship's company had had one stool investigated by this method a simpler modified technique was employed which enabled the laboratory to handle 100 stools per day.

Another difficulty arose over the number of negative stools required to clear individuals because the ampicillin therapy, which lasted two days before the start of sample collection, meant that the growing incidence of positive would occur at the third or fourth stool examination. Therefore, to be statistically confident of elimination of secondary carriers the following number of examinations were made.

TYPES A and B and professional foodhandlers	6 stool stool cultures
TYPES C	4 stool stool cultures
Infected Professional Foodhandlers	14 stool stool cultures

Results

Eleven positive cases were found:

TYPES A and B	6
TYPES C	5

All TYPES A and B and professional foodhandlers had a minimum of 10 stools cultured, the majority having 14 or more.

All TYPES C had a minimum of 4 stool cultures, many having between 8 and 10 negative.

All infected professional foodhandlers had 14 stool cultures done.

All cases with positive stools were sent to the RAN Hospital, Singapore, for treatment and further clearance.

It is of interest that 7 persons were found to have *Shigella*. There was a total of five different strains of *Shigella* found, no consistent findings and no contributory to the problem. However, as a precautionary measure all these cases were treated with 10-day trimethoprim 2.5-G courses, sent to the advice of the Medical Specialist, Raffles Medical Research Hospital.

HMN Cruise ship sailed on 21st July, 1966, with a clean bill of health.

Discussion

It seems unfortunate that ship like HMN Cruise ship should be so short of galley space and staff that refecting mess seems to be the only practicable way of preparing food. Moreover the lack of adequate refrigeration space in the galley means

that the prepared meat, a good growth medium, will readily grow organisms in its chambers.

Although the survey crew was a direct cause of the epidemic, the possibility that this organism was, to some degree, endemic at HMS Cary even before the epidemic outbreak, cannot be discounted with any certainty. It was, impossible because of inadequate laboratory facilities at the Seydlitz to test this theory by doing swabs on all members of the ship's company.

Once more strict hygiene measures proved their worth as there was no second wave of the epidemic despite the fact that it occurred in a small community which had no chance of getting more fresh food, bathroom and galley sport.

The clinical effects of the infection were severe as urine tests indicated the presence of blood in the stools indicated a heavy infection. It could be argued that the original source of the Seydlitz was a factor which influenced towards a more severe clinical picture than that which one would normally expect with this organism.

Because of the difference in oral culture, incubation times, Widal being proved to be of little value during the epidemic. Constantly it did not appear that the illness was modified by TAb inoculation, which probably demonstrates the specificity of this immunological procedure.

After the epidemic

The problem of accommodation, heating and wiring at HMS 15 proved to be considerable as the Victoria Hospital, Seydlitz, is quite small. However due to the kindness of the Director Medical Services, Director P. Hansen and the co-operation of the mission, this problem was steadily solved. The laboratory work load was increased due to our demands, but this did not prevent a good output, which was remarkable as facilities were limited and there was only one qualified technician.

At all times during the epidemic and clearance the Principal Medical Officer, Medical Staff, Air Commodore W. B. Thornton gave invaluable support and advice and greatly encouraged me in my personal interest. Colonel A. J. Moss, Director, Assistant Director Medical Services (Hygiene) co-ordinated the clearance at Aden, his wide experience in the field of hygiene enabled the epidemic to be prevented eventually. Flight Lieutenant A. Shantappa Kumar was the pathologist who provided bacteriological facilities at Aden. It was largely due to his intelligent approach of the problem, extensive and the hard work both by himself and his well trained laboratory staff, to deal with a clean bill of health. His report is reproduced in the following paper.

REPORT OF THE BACTERIOLOGICAL FINDINGS FOLLOWING AN EPIDEMIC OF *SALMONELLA* *ENTERITIDIS* IN A SMALL SHIP

By **Flight Lieutenant A. J. MARRINGS-RICE, R.A.F.**

In the latter part of June, 1946, an outbreak of food poisoning occurred in HMS *Caradoc* while the ship was in harbour at Port Victoria in the Seychelles. Within three days of the first case appearing, not less than 10 members of the crew were affected and required treatment with Chloramphenicol. New patients continued to appear daily until a week after the beginning of the outbreak, it was decided to administer Ampicillin prophylactically to the entire ship's company.

HMS *Caradoc* with a complement of 240 men on board, arrived in Aden on the 15th July 1946. A ship's bill of health was then forwarded to the nearest port of call. It was recommended that this should require the bacteriological examination of some 1,500 stool specimens. The task was given to the laboratory at Khartoum Navy Hospital. A maximum of 47 days was allowed to complete this operation.

The ship's company was classified as follows:

Category A. Patients who had a clinical diagnosis and were hospitalized in the Seychelles. The patients were routine patients, abdominal distension, constipation and diarrhoea. These numbered 74 in all and were classed as to be critical in Aden.

Category B. Individuals who had no overt clinical symptoms but had a positive stool culture for *Salmonella* in the Seychelles. These numbered 26 in all and included three professional food handlers.

Category C. Individuals present in the ship at the time of the outbreak but without any clinical or bacteriological evidence of infection. These numbered 140 in all and included eight professional food handlers.

The number of samples of stool specimens taken from each member of the ship's company was as follows:

Professional food handlers in Category B	14
Professional food handlers in Category C	11
Individuals in Category C	8
Individuals in Categories A and B with the following exceptions	11
No. 3274 A.D.	9
No. 3276 D.H.	10
No. 3278 P.C.	10

In nearly all 100 gram specimens were obtained each day in small glass, polystyrene dishes and to the 15th entry were made in bottles of 20 to about 60% and 100%. The entire stool from ship's food handlers for examination the officers

used their names. The first batch of specimens was delivered to the laboratory on the afternoon of Wednesday, 25th July, 1964.

The bacteriological method employed for the isolation of *Salmonella* consisted of inoculating each individual faecal specimen on to Desoxycholate Citrate Agar (DCA) and onto Selenite F Broth (SFB) with subsequent subculture of SFB on to MacConkey Agar (McA). Non-Lactose Fermenting (NLF) colonies were picked off from DCA and McA plates and subcultured into Peptone Water, Lactose-Serovar medium and Urea Broth. Colonies showing fermentation of the Lactose-Serovar medium and/or splitting of Urea were designated. Colonies showing characteristic NLF properties were subcultured on to Triple Sugar Iron Agar, Serovar Citrate Agar and McA as a pump plate. Motility tests and indole production were carried out on the Peptone Water. Growth, giving the characteristic reactions for *Salmonella* were confirmed by serological methods and identified as far as possible. At all times only whole plates were used for primary inoculation procedures.

In the initial stages of this survey it was necessary to pick off and investigate an average of two to three NLF colonies from each plate. It therefore became apparent that it would be impossible for the laboratory staff to cope with 100 specimens per day; the minimum number required to complete the investigation is the time allowed. After the whole of the ship's company had one sample each investigated by the method detailed above, the procedure was modified by the students of the DCA plates. It was considered that in view of the recent antibiotic therapy the chance of isolating *Salmonella* would be increased if the faecal specimens were sub-cultured on to McA from SFB (which favours the growth of *Salmonella*) rather than plated directly on to selective media such as DCA. Employing this necessary modification a total of 1,000 bacteriological examinations of faeces was completed in 10 days.

The large number of NLF colonies picked off from the normal plate cultures proved to be equivalent giving typical reactions such as the gas reaction test. It was interesting to note that as the investigation proceeded the number of NLF colonies per plate became reduced. It is tempting to attribute this finding to the reduction of normal intestinal flora after prolonged antibiotic therapy.

Results

Eleven patients with positive stool cultures for *Salmonella* were isolated by the laboratory. In each instance the findings were confirmed by the World Health Organisation Reference Laboratory. All the organisms were typed as *Salmonella* enteritidis.

Categorization of stool &

Salmonella isolated from stool specimens number

No.	26	CPO	5
No.	14	CH/EL	2
No.	14	REA	2
No.	62	MED	11
No.	324	RD	9

Category	No. (No.)	Subcategory	Number of (No.) steel specimens examined
No. 8262	118		3
No. 369	161		3
No. 8268	143	a2	5 and 6
No. 761	124		4
Category C			
No. 8272	143		3
No. 311			6

14 and patients only was two per cent, and sufficient for laboratory work had required.

Most of the professional level handlers produced a positive result.

Summary

Eleven carriers of *Salmonella enteritidis* were isolated of which nine were previously suspected and two were not. The isolates were checked for the first time on steel specimens No. 2 and as late as on steel specimens No. 11; tested values exceeding at No. 2 and No. 5. In part they could be attributed to random sampling and to Amputation therapy starting only two days before the last specimens were examined. Halfway through the project a statistician was invited to analyse the findings. Assuming that the chances of positive culture after the 14th steel are negligible, that the epidemic is symmetrical in nature and the observed mean of between four and five it was suggested that a Poisson distribution applied. The probability of obtaining a positive culture at or after last six steel members is as shown in the accompanying table (i.e. at least 11.4 in 1000). The predicted distribution of positive cultures was later tested. Using the G² test and for goodness of fit G² test (Square = 0.25 for 5 degrees of freedom) the predicted values were shown not to differ significantly from those actually observed. Such differences as did occur would be expected to be repeated once in every seven such runs, persons. Therefore the assumption of a Poissonian population is not discarded.

POISSON DISTRIBUTION

X	Px
0 or 1	0.000
1 or 2+	0.000
2 or 3+	0.003
3 or 4+	0.008
4 or 5+	0.021
5 or 6+	0.043
6 or 7+	0.071
7 or 8+	0.114
8 or 9+	0.155
9 or 10+	0.214

PSYCHIATRIC FOLLOW-UP

By Surgeon Commander B. H. Murrell, RN
and Lieutenant Colonel L. L. E. MURRAY, RAYK

Introduction

It became the practice in the Psychiatric Department in RMH Singapore to examine in the United Kingdom only those patients who were suffering from major or psychotic illness. The rest including a few who were diagnosed briefly in hospital observation others were returned to duty. In practice no difficulties arose.

At the end of 1965 it became possible to follow up all the Naval and Marine patients seen in Singapore in 1964.

Follow up Results

One hundred and twenty Naval and Marine personnel were seen as psychiatric patients in Singapore in 1964.

Twenty patients were referred to UK. Of these

Five suffered from schizophrenia

Four suffered from endogenous depression

One suffered from dystonia

None suffered from alcoholism or so

One suffered from encephalitis

The remaining 150 were sent back to duty. Of these

Three were sentenced

Eight were not full recovery with no further specialist psychiatric care

Four received subsequent specialist psychiatric care in UK and of these

One received a psychiatric discharge and

One was recommended as unsuitably unstable for service but is still serving

One suffered subsequent orthopaedic fracture.

Eleven were discharged for the temporary ailments for which they were referred

14 the psychiatric in Singapore

Two were discharged by portals

Four were subsequently discharged the Service

Five were released at the end of normal engagement

Of the 150 sent back to duty 46 were on patients and 54 were on patients

Comments

Of the 49 patients who were not discharged immediately for the behaviour which led to their referral to the psychiatric Unit were seen again by a psychiatrist in

UE. Of these 100 patients, two were known to be living outside the U.K. but none had become, in the meantime,

Discussion

The results of this follow-up show that non-psychotic psychiatric patients can be sent back to duty without causing difficulties. There is some administrative re-orientation and the psychiatrist may be tempted or even reduced to believe that many of those referred to him are of no use to the Service. He may then discharge such patients on psychiatric grounds. The results presented here suggest that such a policy is mistaken. It may be that a too pessimistic view of the prognosis for Naval patients is leading to a high surrender rate.

Unnecessary evacuations and discharge of Service psychiatric patients represent a heavy drain on Service resources. In view of the results of this follow-up it may well be thought advisable to return all non-psychotic patients to duty as a Service wide policy and the population followed up is in this survey.

Acknowledgements

We are most grateful for the help of Sergeant Captain J. W. Walker OBE RN Fleet Medical Officer, Far East Fleet, and his staff.

THE ROYAL NAVY MEDICAL CLUB DINNER 1967

The Annual dinner of the Royal Navy Medical Club was held at the Festival Hall at the Royal Naval College, Greenwich on Monday, 27th April, 1967.

The President, Surgeon Vice Admiral E. D. Caldwell, C.B. (RAF), MD, L.D.S. FRCP (Edin) delivered the following speech:

"Be Good, My Lords, Ladies and Gentlemen. Over the years as I have sat listening just prior to the Medical Director General's speech, I have always found myself struggling to convey to me

- 1 'Will it be a reasonably short speech?'
- 2 'Do they write these speeches themselves?' and
- 3 'I wonder if they are nervous!'

In most any of you should be thinking along those lines I can now help you. The answers are yes, yes, and yes.

The short period since I took over the appointment as MEDG has stimulated with me issues heavily clouded by the impact of the pay freeze. I have no wish to belabour this issue tonight but as members of its topical importance and also on account of the limited opportunity there is to speak in so many of you, the issue must be faced and the issue must be mentioned. I hope our membership guests will therefore leave with me.

Naval doctors and dentists have, (as, if I may have so many others) a highly precise three six months standard — their six months submit to the economic needs of the country. They have accepted patiently and with good grace the subsequent prolonged delay in implementing a pay rise but the pay rise is below that of their civil medical Service colleagues and far below that of their previously agreed analogue — the NHS General Practitioner. The Service doctors and dentists consider the situation both unjustly and inequitable. I sympathise with them wholeheartedly. I do not propose to detail their grievances for the percentages and furthermore I know it is hardly mid the actual pounds, shillings and pence which it is the root of their present uneasiness — no, it is the mere separation from their professional colleagues and it is the sudden downturn from the previously accepted standards that has brought about the current feeling of uneasiness and the dissatisfaction which is present.

There is a loss of confidence, a shuffling of the teachers, and it would be a disaster to shut each type or each arm to the fact that the current Government policy is continuously aimed at being unopposed to the claims of the Medical and Dental branches. And more and more Service doctors see the policy as being a planned democracy. However, we will continue to represent our case.

I repeat and profoundly convinced that the future pay structure of our Branch should be based on an assessment as doctors rather than as Naval Officers. Let me make myself perfectly clear. I love the Navy and am proud of being a Naval Officer but (and here I am sure that I speak for our Branch) I am not prepared to my professional status as a doctor.

Let us have no more on pay tonight but I would like to thank my fellow Directors and the able Secretary for their constant support and help, and also

Dr Derek Stevenson and the Armed Forces Committee of the British Medical Association for their collaboration and interest on our behalf. I would also like to thank all my own staff in MDD's Department for their hard work, help and loyalty during these first five months.

Fundamental and far reaching changes are occurring and will occur in the Navy. Some of this is undoubtedly responsible for there is no place for wasteful expenditure (such a waste!). The Navy of the 1950's will present many new many exciting challenges but it will be a different Navy from what most of us have grown up in and it is a sad certainty that in the Navy and its bases and its hospitals the contrast and demands are not probably any less than the closest doctors the depth of research and the overall needs of all medicine in the Royal Navy has never about higher.

Surgeons and increasingly enough, this has brought another problem into being, there will come standard standards for work in Coastguard about the shore in, up with Civilian hospitals with their new techniques, and the standards of research have brought in their time, particularly in the younger consultants. I am, of frustration in the limitations of our of Service medicine per se but of the opportunity to explore and practice this, exciting new science, and techniques make the exciting but apparently contrasting Naval frame work.

It would be easy to sit on to their own. You claim the Navy has other problems. This is my mind is, struggle and out of keeping with the limitations of today. What is the answer?

One answer must surely lie in our understanding the full medical care I met with Naval dependents in the United Kingdom. Approval has been long discussed from the Board of Admiralty for this policy and it is up to us to prove, and the temporary difficulties of One explains the policy as soon as we provide but effectively and efficiently, can do so. Secondly I feel we must come of a closer closer integration with the other two Services and the NHS, which would be, I want to broaden the scope and the appointments and could bring it support support of facilities on both sides.

I mention all these points at some length for they are worthy of thought and consideration by all of you, who by the very fact of being here tonight produce a main interest in the Naval Medical Service.

So for this, may have earned a rather glowing review so let us illuminate it with some recent highlights.

The clinical demonstration held at Hatter on behalf of the British Orthopaedic Association's Annual Meeting, was an ambitious but most successful venture. I heard many enthusiastic comments on the material and on personal staff and above the hospitality of Hatter, at least on the other organisations. For this much credit is due to Surgeon Rear Admiral Penbury has orthopaedic team and the many others who helped to make it such a memorable occasion. Surgeon Captain Pugh in particular deserves much credit for the success and smoothness of the entire venture and of course, the original concept of this great event was our consultant and good friend Mr Jackson Burrows.

Many interesting research projects are under way at the Royal Naval Medical School under the lively leadership of Surgeon Captain Frank Ellis and Surgeon

average duties one might wish, and the splendid work done by Surgeon Commanders at sea. The film on Druggies, based on his own battle journal, and differentially screened. Another interesting project is the production and release of work being done in Portsmouth on Antibiotics by Surgeon Commanders at sea. In all these ventures a close and valuable liaison exists with the M.R.C. we are very grateful to them for their help and long interest.

Naval doctors are currently being posted to sea ships in America, Benelux, Westland, Turkey and widely in the United Kingdom.

Surgeon Commander Fulford has brought much credit to our Service by being awarded a Gold Medal on leaving his M.S. in Liverpool. A splendid performance. He must be congratulated too on his appointment as Naval Surgeon to Her Majesty the Queen following the distinguished service of Sir Basil Smith F.R.C.S.

The various specialities in our Medical Service are represented today by veterans and busy kind of Professor of Surgery James Watt, an eminent obstetrician and the equally capable Professor of Medicine Laurence Topham.

The combined defibrillator, monitoring equipment and electro cardiographs used for cardiac resuscitation, the hypothermia oxygen portable chambers, and the renal dialysis machines are interesting, valuable and comparatively recent additions to our hospital facilities.

S.R.A. Stanley Miles continues to blast a Physiological trail which is of wide scope. He stresses the importance of Gastroenter Medicine in its widest application, pointing out hazards and subsidiary problems in being a worthy challenge to all doctors. Recent events stress the necessity of acute attention to the most recent of developments in this area.

And finally that constant challenge, Medical Special Branch or Night one again. But at Blackheath, Black on the Day or even the. And one more Medical with S.R.A. Dudley Good as the, visible, is now on the front.

I make no apology for this cramped welcome. I have done it purposely to show what progress we have made and what fronts lie ahead. Together we can and we will enjoy them.

Now let me turn to the very pleasant task of welcoming our guests. I can only suggest not a few, but all of them will know we are delighted to have them with us.

You Sir, our principal guest, it is a pleasure and a privilege to all of us to introduce you here tonight. Sir Good has a glittering list of achievements and honours in his name. His clinical work as well as his many papers and public talks have rightly influenced world medicine. He joined the Royal Navy as a trainee primary Surgeon in 1937 during the first World War, which very credit makes us a very good man over FIFTY years on!! - a formidable thought. He became a Divisional Commandant in the Navy in Surgery in 1949 and he has given us the benefit of his skill, his advice, his friendship and his deep affection for the Navy for many years. WE SALUTE YOU.

May I suggest, now rather light heartedly, 'Early in the Second World War Mr Good Working and Dr John Bonlands both worked on the staff at Hader

Hospital conditions as their uniforms as Surgeon Rear-Admirals — because an epidemiological pre-arranged hierarchy — and competence among amongst the whole of the club. Every Minute of Mine as it is whether there was in would be the same. I'm present. You all had so, we now there suddenly where and our equally competent. A wonderful story that entered and was delightfully spread around that Sir Alan Reynolds had been seen at dead of night stuffed in a dark cloak slumping a piece of chalk and creeping around the walls of Hader on which he was standing on huge white letters — **WARGLEY MUST GO**

Sir Alan Reynolds was not welcome here and all our Consultants whose ready help and advice we so much appreciate

I am an ex-Physician and he performed in particular to single out Dr Donald Brooks and Sir Ronald Rodley Scott. I am very glad to see Dr William Evans held him — at it well, much regret I tell you he is partly returning from his Civil obligations in Canterbury this year. In his place we welcome Dr William Rogers. I know us, all with White Cross much happiness and health. His position here has great interest and his willing leadership will be supported with affection by us all.

The representatives from the three Royal Colleges bring greetings to our meeting and for the time, of them to come to us tonight in the midst of their busy duties and many obligations is greatly appreciated. Sir John Peel, Sir Max Rosenbaum, Professor Rodley Adams.

We all warmly welcome you here tonight and thank you for your ever ready interest in and advice to our Service.

Sir Markham Clay we are extremely glad to have him as President Under Secretary of State. He might be thought of as General in the house, but he is a popular and much respected General and the House are very friendly and I cannot well fail.

Sir Markham Green taking me is comparatively new in his appointment. He is Director General of the Air Force Medical Service and to me he is an old friend and fellow student from Edinburgh University days and he still looks as if he could spend down the wing with the speed and persistence he had in those far off days.

Major General John Douglas, we are glad to see him as the representative of the Army Medical Service.

The Dental Profession has strong representation with us tonight in the persons of Mr Deney, President of the Dental Association, Surgeon Rear-Admiral Wilgoss, CBE, F.D.C., with the Ministry of Health, also Major General Forsythson, Director of the Senior Dental Service and Air Vice Marshal Knapton, who holds the similar position in the R.A.F.

Sir Arthur Ferriss, who will soon be leaving us, takes up his illustrious appointment as Governor General of New Zealand, will be much missed in many many spheres. We recognise him and wish him well.

Sir George Goffin, Chief Medical Officer of the Ministry of Health is a well-known and well-known person with us as is also Sir Cecil Mait, the Controller General of the Ministry of Public Buildings and Works. He is responsible for

amounts that the sum of £12 million, which is spent annually by the Ministry upon the R.A.M.C., is a good sum to have at dinner!

It is now my duty to declare it is last. I hope you must all feel it worth that for the first time in the history of the club we have ladies dining, such as is only a rare occurrence, and I hope, I will not sound unpleasant if I refer to them as the first and, of a very desirable nature!

The R.A.M.C. as always, have a strong team here tonight and, as always, a very welcome one too. In particular I would mention Captain Lumsden of 10th Field Ambulance and Surgeon Captain Mailes, QMB, the Senior R.A.M.C. Officer.

Finally, but by no means least, a very warm greeting of welcome and a thank you to Rear Admiral Bayly (President of the College) and to Captain Hensell and Commander Price, of the Royal Naval College. We are indebted to them for the permission to draw once again on their valuable surroundings. The Purcell Hall and its unique atmosphere gives a wonderful sense of well being which is all its own. Though slight I also regret that a small contribution to the pleasant repasts may be made by good food and good wine flowing in on the correct table.

I would like to thank Surgeon Captain Winton for all the hard work he has put in to organize this dinner and of course a thank you too to the Royal Marine Band and to the staff.

I WISH YOU ALL A YEAR OF PEACE AND PROSPERITY. Will the members now rise and drink a toast to our guests.

Reviews

1. *Principles of Neurophysiology*, By W. D. Wyke and M. L. Lumsden. London: The Medical Book Co. Ltd. 1960. Pp. 300. 10s. 6d. (Hardback). Lloyd-Luke (Medical Book Co.) Ltd. Price 10s. 6d. (Paperback).

These two authors have not, as might be expected in a young book, attempted to provide a complete and up-to-date survey of the field in its present complexity and its many interconnections. However, the neurophysiology, Physiology and Physics are reviewed before the clinical aspects of neurophysiology are described.

1. The Physiology and Pharmacology sections are, particularly, impressive and contain much that is new and useful, and a good chapter.

2. The Clinical Neurophysiology section, however, the authors have avoided the narrowness of many textbooks by giving and then giving a balanced account of various problems. Very good chapters on EEG, EMG, and the recording of evoked potentials.

3. In three chapters, the authors give, at least, a fairly adequate reference on pain. The value of these chapters is increased by the inclusion of the full title of each chapter and a short summary of the main points of each chapter's scope.

There are two parts to the book. The first part (1960) is all but complete, up-to-date and contains the chapters on Neurophysiology and Clinical Neurophysiology. The second part (1961) contains the chapters on Pain, EMG, and the recording of evoked potentials. The authors have given a good account of the physiology and physics of pain, and the chapters on Pain, EMG, and the recording of evoked potentials are well written and contain a good deal of new material.

Like the first part, the book is well written, readable and gives a good, rounded account of the field of neurophysiology.

It is a pity that the book is not more complete, but the authors have done a good job of it. The book is well written, readable and gives a good, rounded account of the field of neurophysiology.

It is a pity that the book is not more complete, but the authors have done a good job of it. The book is well written, readable and gives a good, rounded account of the field of neurophysiology.

2. *The Physiology of the Human Eye*, By W. D. Wyke and M. L. Lumsden. London: The Medical Book Co. Ltd. 1960. Pp. 300. 10s. 6d. (Hardback). Lloyd-Luke (Medical Book Co.) Ltd. Price 10s. 6d. (Paperback).

Although the authors are not fully qualified to write this book, they have done a good job of it. The book is well written, readable and gives a good, rounded account of the field of neurophysiology.

The authors have done a good job of it. The book is well written, readable and gives a good, rounded account of the field of neurophysiology. The authors have done a good job of it. The book is well written, readable and gives a good, rounded account of the field of neurophysiology.

The authors have done a good job of it. The book is well written, readable and gives a good, rounded account of the field of neurophysiology. The authors have done a good job of it. The book is well written, readable and gives a good, rounded account of the field of neurophysiology.

The authors have done a good job of it. The book is well written, readable and gives a good, rounded account of the field of neurophysiology. The authors have done a good job of it. The book is well written, readable and gives a good, rounded account of the field of neurophysiology.

3. *The Physiology of the Human Eye*, By W. D. Wyke and M. L. Lumsden. London: The Medical Book Co. Ltd. 1960. Pp. 300. 10s. 6d. (Hardback). Lloyd-Luke (Medical Book Co.) Ltd. Price 10s. 6d. (Paperback).

The authors have done a good job of it. The book is well written, readable and gives a good, rounded account of the field of neurophysiology. The authors have done a good job of it. The book is well written, readable and gives a good, rounded account of the field of neurophysiology.

The authors have done a good job of it. The book is well written, readable and gives a good, rounded account of the field of neurophysiology. The authors have done a good job of it. The book is well written, readable and gives a good, rounded account of the field of neurophysiology.

Figure 1 shows the results of the regression analysis. The value of R^2 indicates that the regression model explains 66% of the variance in the dependent variable.

There are two types of *Phragmites* in the world, *Phragmites australis* and *Phragmites pectinatus*. *Phragmites australis* is the most common and is found in most wetlands. *Phragmites pectinatus* is a less common species and is found in some wetlands. Both species are native to the Americas and are found in a wide range of habitats, including wetlands, marshes, and coastal areas. *Phragmites* are important for many reasons, including their role in providing habitat for wildlife, their ability to filter pollutants from the water, and their use in erosion control. However, *Phragmites* can also be a problem in some areas, as they can form dense stands that crowd out other plants and animals. In some cases, *Phragmites* can also be a fire hazard, as they are highly flammable. Therefore, it is important to understand the biology and ecology of *Phragmites* in order to manage them effectively.

Thus, the fact that the long history of the practice of making out to strongly represent the individual is not a strong line of thought, particularly in the case of all members of the group, but is a strong line of thought.

Journal of Interpersonal Violence 26(10) October 2011 1989-2004
© 2011 Sage Publications 10.1177/0886260511419892
http://jiv.sagepub.com
DOI: 10.1177/0886260511419892

For example, the use of a 100% threshold is not. From this, the following statement follows: "If a 100% threshold is used, then the use of a 100% threshold is not." This is a tautology, and it is not a logical statement. The use of a 100% threshold is not a logical statement.

The Journal of Management Education, Vol. 29 No. 6, December 2005
© The Author(s) 2005
Reprints and permissions: [http://www.sagepub.com/journalsPermissions.nav](#)

1. The paper and volume for James Brown has proved the commitment to go a little further and deeper. The second volume's manuscript and the 1-4 edition has added a new chapter on the 1970s (American) presidential election and the segment on what all the changes

It will have a long career on the beach.

[illegible]

^a The first two rows correspond to the standard normal distribution. In this case, the mean is equal to the expectation of the random variable.

Index #	Gen. Species	On alluvial soil	On sandstone	On limestone	On shale	On clay	On peat	On other
1	<i>Ammonia</i>	100	100	100	100	100	100	100
2	<i>Ammonia</i>	100	100	100	100	100	100	100
3	<i>Ammonia</i>	100	100	100	100	100	100	100
4	<i>Ammonia</i>	100	100	100	100	100	100	100
5	<i>Ammonia</i>	100	100	100	100	100	100	100
6	<i>Ammonia</i>	100	100	100	100	100	100	100
7	<i>Ammonia</i>	100	100	100	100	100	100	100
8	<i>Ammonia</i>	100	100	100	100	100	100	100
9	<i>Ammonia</i>	100	100	100	100	100	100	100
10	<i>Ammonia</i>	100	100	100	100	100	100	100
11	<i>Ammonia</i>	100	100	100	100	100	100	100
12	<i>Ammonia</i>	100	100	100	100	100	100	100
13	<i>Ammonia</i>	100	100	100	100	100	100	100
14	<i>Ammonia</i>	100	100	100	100	100	100	100
15	<i>Ammonia</i>	100	100	100	100	100	100	100
16	<i>Ammonia</i>	100	100	100	100	100	100	100
17	<i>Ammonia</i>	100	100	100	100	100	100	100
18	<i>Ammonia</i>	100	100	100	100	100	100	100
19	<i>Ammonia</i>	100	100	100	100	100	100	100
20	<i>Ammonia</i>	100	100	100	100	100	100	100
21	<i>Ammonia</i>	100	100	100	100	100	100	100
22	<i>Ammonia</i>	100	100	100	100	100	100	100
23	<i>Ammonia</i>	100	100	100	100	100	100	100
24	<i>Ammonia</i>	100	100	100	100	100	100	100
25	<i>Ammonia</i>	100	100	100	100	100	100	100
26	<i>Ammonia</i>	100	100	100	100	100	100	100
27	<i>Ammonia</i>	100	100	100	100	100	100	100
28	<i>Ammonia</i>	100	100	100	100	100	100	100
29	<i>Ammonia</i>	100	100	100	100	100	100	100
30	<i>Ammonia</i>	100	100	100	100	100	100	100
31	<i>Ammonia</i>	100	100	100	100	100	100	100
32	<i>Ammonia</i>	100	100	100	100	100	100	100
33	<i>Ammonia</i>	100	100	100	100	100	100	100
34	<i>Ammonia</i>	100	100	100	100	100	100	100
35	<i>Ammonia</i>	100	100	100	100	100	100	100
36	<i>Ammonia</i>	100	100	100	100	100	100	100
37	<i>Ammonia</i>	100	100	100	100	100	100	100
38	<i>Ammonia</i>	100	100	100	100	100	100	100
39	<i>Ammonia</i>	100	100	100	100	100	100	100
40	<i>Ammonia</i>	100	100	100	100	100	100	100
41	<i>Ammonia</i>	100	100	100	100	100	100	100
42	<i>Ammonia</i>	100	100	100	100	100	100	100
43	<i>Ammonia</i>	100	100	100	100	100	100	100
44	<i>Ammonia</i>	100	100	100	100	100	100	100

conveniently. If I had the book available, it is a very comprehensive work which is

© 2000 Blackwell Science Ltd *Journal of Internal Medicine* 247: 395–402

© 1997 by J. B. Lippincott Company, Inc. All rights reserved. Printed in the United States of America. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher. This publication is protected by copyright. Any unauthorized use, distribution, or reproduction in any form is prohibited. This publication is indexed/abstracted in MEDLINE, EMBASE, and CINAHL.

1. *Explain the difference between a "strong" and a "weak" argument.*

11. **Answer:** 1. *Microbiology* is the study of all microorganisms and how they affect the world. *Immunology* is the study of how the body defends itself against disease. *Pathology* is the study of how diseases affect the body. *Physiology* is the study of how the body works. *Pharmacology* is the study of how drugs affect the body. *Biotechnology* is the study of how to use living organisms to make products. *Genetics* is the study of how traits are passed from parents to offspring. *Evolution* is the study of how species change over time. *Developmental Biology* is the study of how organisms grow and develop. *Cell Biology* is the study of the structure and function of cells. *Molecular Biology* is the study of the structure and function of molecules. *Biochemistry* is the study of the chemical processes that occur in living organisms. *Plant Biology* is the study of the structure and function of plants. *Animal Biology* is the study of the structure and function of animals. *Human Biology* is the study of the structure and function of humans. *Environmental Biology* is the study of the interactions between organisms and their environment. *Marine Biology* is the study of the structure and function of organisms in the ocean. *Microbial Ecology* is the study of the interactions between microorganisms and their environment. *Immunology* is the study of how the body defends itself against disease. *Pathology* is the study of how diseases affect the body. *Physiology* is the study of how the body works. *Pharmacology* is the study of how drugs affect the body. *Biotechnology* is the study of how to use living organisms to make products. *Genetics* is the study of how traits are passed from parents to offspring. *Evolution* is the study of how species change over time. *Developmental Biology* is the study of how organisms grow and develop. *Cell Biology* is the study of the structure and function of cells. *Molecular Biology* is the study of the structure and function of molecules. *Biochemistry* is the study of the chemical processes that occur in living organisms. *Plant Biology* is the study of the structure and function of plants. *Animal Biology* is the study of the structure and function of animals. *Human Biology* is the study of the structure and function of humans. *Environmental Biology* is the study of the interactions between organisms and their environment. *Marine Biology* is the study of the structure and function of organisms in the ocean. *Microbial Ecology* is the study of the interactions between microorganisms and their environment.

The validity of these postulates, whether for the many postulated in the context of many

from the following table of the present status of the various countries. The following table shows the present status of the various countries.

and, finally, the fact that the model is not a simple linear model, but a complex one, and that the model is not a simple linear model, but a complex one, and that the model is not a simple linear model, but a complex one.

(b) The specimen is submerged in water for several days. Then plastic micrographs (microfilm) are prepared by using a Zeiss 10A electron microscope at 10 kV. The electron microscope is located in the Physics Department of the University of Illinois at Urbana-Champaign.

page 10. I actually printed out the graphic pages in printed and hand-drawn versions, as well as the text of each page in computer and hand-drawn versions, as a backup in case.

and the overall quality of the work. In the United States, the quality of the work is often measured by the number of errors and the number of rework requests. In the United Kingdom, the quality of the work is often measured by the number of errors and the number of rework requests. In the United States, the quality of the work is often measured by the number of errors and the number of rework requests. In the United Kingdom, the quality of the work is often measured by the number of errors and the number of rework requests.

repeated this for several years, and finally he got out to the other side, back in the country, to make his life like mine, as he is now, really, in my job, in the city. If someone wants, I can still read him now.

Editor

The Editor invites medical officers to send us original papers on professional subjects (travel, personal experiences etc.). Items of news and matters of interest to the naval medical service will be welcomed from ships and establishments, on home and foreign stations. Notices of births, marriages and deaths are inserted free of charge to subscribers.

All articles or communications published in the JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE will become the property of the JOURNAL, with full copyright powers, unless the author declares when sending in the article that he desires to reserve the copyright to himself.

The Harvard system should be employed for bibliographical references; these references being arranged in alphabetical order of the author's name at the end of the contribution thus: "Smith F G (1956) J. etc. etc. and refs 22-25." In the text a reference to a publication should be cited by giving the author and no less than the date thus: "Smith (1956) believed this to be due to..." (link of boat information on the strategic fundamentals of the course of the war (Chapman 1956) p.

The JOURNAL is published 3 times a year: 3 numbers comprising one volume.

Articles and communications may be sent to the Editor at any time. They should be clearly written or, preferably, typed and sent in triplicate to the Editor, RN Hospital Haslar, Gosport, Hants.

Subscriptions

For RN and RNR medical and dental personnel on the active or retired list, and for Committees to the Royal Navy, the subscription is 25s per annum (postage is included) payable on 1st January of each year. Single copies 7s.

For all others who are not on the above categories the subscription is 25s per annum (postage included) or 5s per single copy.

Cheques and postal orders should be crossed "United Bank Ltd. and made payable to the Editor, The Journal of the RN Medical Service.

The payment of subscriptions by banker's order is recommended as it relieves the subscriber of the necessity of forwarding a cheque each year and simplifies the keeping of accounts.

It applies unless for statements to be made to:

THE EDITOR

JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE
RN HOSPITAL HASLAR, GOSPORT, HANTS.

Journal

of the

Royal Naval Medical Service

PUBLISHED THREE TIMES A YEAR

(The Editors do not accept responsibility for the opinions expressed in this Journal)

CONTENTS 165

ARTICLES

Boxing at Judo? By Surgeon-Superintendent P. G. CLARKE BA BSc 169

Aspects of Alcohol and Service Medicine. By Surgeon-Commander D. H. MASON MB BS LRCP DPM MC 173

Appointments in Ghana. By Surgeon-Commander J. R. LEBLANCQ OBE DPM DMC DMSA MC MC 177

Dental Surgery Amongst the Aborigines of North Malaya. By Surgeon-Lieutenant (a) N. R. ARTHURSON MC DMC MC 181

Helicopter Survival Equipment Test — Australia. By Surgeon-Commander K. J. MATHIAS MC MC MC MC MC 185

The Pinoculium with Particular Reference to a Type of Pinoculoma — A New Issue. By Surgeon-Commander J. H. SEWART MC MC MC MC MC MC 191

REVIEWS 197

NEWS IN THE SERVICE

Obituary: Higher Qualifications, Promotions, Professional Selections for promotion to date 31st December 1967. Transfer to-Patients on Land Quoted Entries from Entries Retained in Terminations of Commission. Warranted Officers (Quoted Alexander's Royal Naval Nursing Service Royal Naval Reserve) 199

Index 207

Notes 211

EDITORIAL COMMITTEE

Surgeon-Superintendent G. MILES MC

Surgeon-Captain (a) W. E. SHAW MC MC

Surgeon-Captain L. G. TOWERS MC Professor of Naval Medicine

Surgeon-Captain J. WATTS MC Professor of Naval Surgery

Miss J. E. RICHARDS

@ Internal

In *Appointment in Ghana* "Urnal Surgery amongst the Aborigines of North Malaga and Survival Tests in Australia" we have three advisory notes which interestingly show that the Navy from time to time sends its doctors and dentists into unusual places. We cannot agree with Lawrence Owen's suggestion that an appointment such as this would not have attracted study of the colonists. It is appointments such as this which make the Naval Service really contribute and we envy him especially those of us who undertake our own travels in that remote Air Station in Ghana — HMS *Sydney*.

Wooty and Judo also make history by being our first contributors from a *Seymour* Submarine. It is hard of him to discuss so controversial a subject and it must be emphasized that his findings will not be universally accepted. He bases heavily on reports in the Journal of Sports Medicine and Physical Fitness on Italian production. To quote EPO changes in horses when on EPO's are available for jockeys is a little unfair. In the 1925's, exponents of punch drinkerism quoted jet horses in jet heat? We would like to know what Jockeys and Pursons found!

It is true that horses may follow exercise but to what do the percentages given in the table refer? Is offering the horses really such a common practice as today's?

When reports on jockeys are described as figures for jockeys for jockeys but a state of having reports are questioned. Unless accurate figures are available for both sports comparison is meaningless.

Three findings are reported for jockeys and two for having, but no further work is the number of state is risk given. Without this figure no conclusion can be drawn. It may well be that jockeys on the other sport but the bias expressed in the article is not supported by the evidence presented.

These editorial comments are not intended to discourage the author. Indeed it is sincerely hoped that he may be encouraged to pursue his interest in this important and controversial subject. He will be given every help to do so.

Articles

BOXING OR JUDO?

By Paul Clarke

For many years now there has been a growing campaign against the continued use of amateur boxing as its present form. In 1961 Dr. James Hammond¹ introduced the Boxing Bill which was the result of much medical debate. The bill proposed radical changes and the abolition of amateur boxing as its present form. It was defeated quite narrowly and that disappointment was that. This article is mainly the result of the author's desire to look critically at the evidence relating to boxing and judo and try to decide whether judo might not be the safer sport.

CNS DAMAGE

There is the boxing injury which has been the subject of much debate because first, changes may be slight and not easily recognizable; second, changes may occur over long periods of time and so therefore follow up surveys are easily engaged and third, neurologists know so little about normal degenerative processes that it is very difficult, except in extreme cases, to lay the blame at the doors of boxing. In judo there is no evidence of CNS damage but one of two aspects of possible injury will be discussed later.

in EEG Studies. According to Horvath (1962) there is indubitable evidence that in professional boxing, serious EEG disturbances follow severe boxing bouts. The American International Boxing Association made a study of the pre and post fight EEG in 22 amateur boxers. All showed alterations after the fight, yet even when the boxer had taken heavy punishment, the tracing returned to normal after five minutes. While this may appear to suggest that no damage was done, there are two reasons why this conclusion might be false. First, cellular depolarization has been shown to have a long course and the stage at which the recovery becomes slow, modern is not known. A follow up series compared with the original tracings might be valuable. Second, no one seriously considers that one hour or one fight necessarily causes the cerebral damage, but rather that the effects may be cumulative. However, so many other factors are involved that the interpretation of changes might prove extremely difficult. Certainly no conclusive evidence has yet been presented that persistent EEG changes follow amateur boxing in the way in which they have been seen to occur following professional boxing. No EEG studies have been undertaken on judo players.

in Cerebral Anoxia/Ischaemia. This is also known as the 'Punch Drunk' syndrome.

In a world wide survey by Bloomer (1961) into medical aspects of amateur boxing, there was only one case of brain punch disturbances, that reported by Drayton of Glasgow, who found a few severe than that occurring in professionals in whom there is a 30-35 per cent incidence.

In June 1961 at the Harvard Conference, La Cava (1961) presented a paper dealing with this subject alone. The long-term effects of magnesium, sodium deficiency and hypoxia are of particular interest. Tension reflexes are sustained and a positive threshold may be present. Light reflexes are usually clear. Incomprehension is the factor leading to the descriptive term of "Punch Drunk".

The pathology of the condition was described by Harris, who noted extensive pseudotumor hemorrhages in various regions of the cortex and in the nuclei of the base of the brain. He concluded that this was due to sodium accumulation and deterioration of the brain tissue. That is supported by similar evidence in conditions where cerebral accumulation has been a factor. Harris, Brown and Rowell (1961) also support this conclusion.

In 1961 Wexler, Grant and Fox showed that in the stressed brain, the basal ganglia of the nerve cells deteriorate and severely damaged cells do not survive. This repeated consequence must lead to serious neurological damage through degeneration. However it is claimed that in many cases of boxing knockout, there is no permanent damage, but there is no doubt that some knockouts have the clinical features of concussion. The true mechanism of a ring knockout for example is still a matter for debate but the hypothesis of electrolyte shock causing a drop in blood pressure is no longer supported. Everything appears to point back to actual brain deterioration and dysfunction when the event occurs.

In summarizing, Wexler (1961) commented: "To the extent that the changes in some of the cells are irreversible, the brain suffers permanent damage which will be manifested with repeated blows to the head and finally may produce the syndrome described by the term punch drunk. Although more aptly applied to professional boxing, it implies that the damage will be of the same type but proportionately less severe in amateur boxing."

There is no evidence of morphological recovery in judo although several cases of transient following head hits have been reported. They are however infrequent both in the individual and in the sport and cannot be considered to be anything more than accidental.

Cyfer (1961) has said: "In addition to Jahn's statements and on the light of Purpura's findings, I would say that after the numerous clinical EEG and patho-anatomical findings it can be considered as proven that a high percentage of the many blows have damages even functional disorders and structural changes in the brain."

HAEMATURIA

This is a common post exercise finding and presumably reflects some degree of trauma in the laboratory, but in the arena of Kikonen (1961) knockout blows appear to reflect the highest rate of post-exercise haematuria, presumably due to punching on the renal area.

Boxing	21%
Boxing Ball	16%
Wrestling (Judo)	7%
Rocky	7%

The high incidence in broken fall supports this hypothesis. An efficiency of the kidneys is common practice. Judo has a low incidence as might be expected.

JUDO — GEORGE HOLDS

There is an aspect of judo in that it is at least potentially dangerous with the object of cutting off the blood supply to the brain by carotid compression. If the necessary demands are maintained for ten seconds hypoxia causes blindness. Only in rare cases is the hold fully applied to completion the man on the mat sustaining no more than his hair getting. Sometimes it is complained that recovery seems quick and complete. The contestant was usually fully alert in a few minutes. No long term effects of this hold have been described and no pathological findings are available for obvious reasons.

INJURIES TO SCIENTS

Kawano and Cutler (1963) have studied injuries relating to judo and a further statistical analysis is being completed by H. K. Kawano in Japan. Nearly all the injuries made well very due to a lack of proficiency in the art of break falling in other words spreading the load of the falling body over as large an area as possible. Excessive and unusual strikes may disrupt joints and cause torn ligaments, dislocations or in worst fractures of bones. Nearly all fighters show some degree of bruising and, in particular, major abrasions and lacerations happen. A common injury is anterior-clavicular separation resulting from falling on the point of the shoulder. Occasionally fractures of the clavicle are reported.

The most damaging joint injuries are to the knee where external derangement from pivoting on the partially flexed knee may occur and repeated injury of this nature can lead to arthritis. There are not infrequently lacerations or abrasions, often as a result of poor quality matting. One case of renal detachment following a heavy fall on the back has been reported. There is no evidence of any dental injury although Kato in Tokyo is investigating this possibility.

Boxing injuries to the hand and wrist were presented by Farnow (1965) in a symposium on Medical Aspects of Boxing. Some common hand injuries were described. First Bennett's fracture-dislocation of the thumb, second rupture of the radial collateral ligaments of the metacarpal-phalanx joint third metatarsal finger in which the insertion of the extensor is torn from the distal phalanx and fourth fracture of the neck of the metacarpal or sesamoid bonelets. The two most common injuries to the wrist were displacement of the lower radial epiphysis and fracture of the scaphoid.

Sargent Captain Wain (1965) then discussed these injuries in relation to the Navy. In the 42 cases of hand injury suffered in Fleet over a three year period which were directly due to fighting, he notes a total of organised boxing and 26 due to fighting ashore. Of the 16 in the first group, 5 showed a Bennett's fracture and 11 showed a fracture of the neck of the metacarpal (usually the 3rd). In the second group only two Bennett's fractures were seen and the rest were fractures of the neck of the metacarpal but in these cases the 2nd and 5th as well as the 4th and 5th metacarpals were usually affected. On average the men were seen for 11.25 days in One Forward.

FATALITIES

Three fatalities have been recorded since the initiation of judo in 1941 by Jigoro Kano. Two of these had preexisting disease, one hepatic and one cardiac. The third was not given a post mortem examination.

From Shonin's enquiry (1962) into accidents during Judo classes in charge of the sport all over the world, a total of ten deaths were recorded:

Subdural Hemorrhage	5
Myocardial Infarction	1
Ischaemic Brainstem Paresis	1
Cardiac arrest	2
Unknown	2

SUMMARY

There appears to be mounting evidence that serious damage is a significant injury in amateur boxing. Amateur boxing also shows a higher incidence of fatalities following accidents than do other sportsmen. In judo the most common injuries are to joints, principally as a result of lack of proficiency in break-falling technique. There is no evidence of CNS damage.

It would therefore appear that in a case for adopting judo as the better fighting sport system, boxing, as the primary focus, is seriously injured. The United States Strategic Art Command has already incorporated judo into its physical training programme and the question to be asked is whether one is entitled to risk mental deterioration in a man whose occupation requires him to be alert and observant and to have a high standard of integrity.

(continued from p. 108)

I am most grateful to Dr M. Christ, Salzburg, West Germany, to the Spanish Association of Sports and Medicine for his help in the initial stages of my research and to Professor Eugene Wille (Professor of Social Surgery) for his insight and advice.

REFERENCES

- BRIDGEMAN J (1962) *J. of Sports Med. & P.P.* 3: 134.
 CROOKER BRADSHAW G and BARNES, W. H. (1941) *Journal* 44: 50.
 FUCHSBERG H (1955) *Report on the Work Results of W-Fung, Peking*, Peking Press, p. 44, 22.
 GIBBS, H. (1941) *J. of Sports Med. & P.P.* 3: 56.
 KANAKURA K. H. (1961) *Foot J. of Sports Med. & P.P.* 3: 121.
 LE FORT, G. (1945) *J. of Sports Med. & P.P.* 3: 57.
 MASON, W. L. and CROOKER, P. (1945) *J. of Sports Med. & P.P.* 3: 101.
 MURPHY, M. M. (1941) *J. of Sports Med. & P.P.* 3: 52.
 NOLAN, T. (1955) *Report of the Report for the Scientific Committee on Sports Med. & P.P.* 3: 55.
 SHONIN J (1962) *Report on the Work Results of Jigoro Kano, Peking*, Peking Press, p. 10.
 WILSON, W. (1962) *J. of Sports Med. & P.P.* 3: 134.
 WILSON, W. P., GIBBS, H. L. and FUCHS, A. (1961) *Long, Short & Other* 19: 101.

ASPECTS OF ALCOHOL AND SERVICE MEDICINE

By David H. Morley

HISTORICAL INTRODUCTION

(May 1977, 1978 Lloyd & Cochrane 1985)

Elaboré of Aquitaine, wife of Henry II in 1150 introduced the 'Customs of Clarendon', a code of maritime conduct based on rules current in the Eastern Mediterranean. One rule was that a master was not bound to provide for the care of a seaman injured through drink and quarrelling. This is one of the earliest references to the effects of alcohol on seamen.

In 1567 an expedition led by Sir Francis Drake to attack Lisbon suffered much from sickness, desertion and draft-drawings.

Captain John Smith, a celebrated Governor of Virginia and Assistant of New England, wrote a manual of seamanship in 1615. He stressed the need for proper physical care of seamen including, retching and medical provision. He advised that seamen after exposure to the cold and wet, and because he had 'hearer the bones, to have hot wine to heat a dagger or be steeled with spirit instead of beer and water.

Already in 1590 a cruise ship of the time had lost down an area of a gallon of beer a day for each man. This was probably small beer with putriferous alcohol so deep in gale, but too quickly.

Not only were spirits a source of good cheer and comfort, they also made bad water palatable, as on a voyage of any length beer even had while spirits kept and went of relatively small bulk. The widespread consumption of spirits however depended upon technical advances and agricultural progress.

Arabic (234-752 BC) and Ptolemy (AD 1579) mention primitive methods of distillation. The Alexandrians added the cover and the Aleuts the tube leading off the distilling vessel. Using such simple apparatus spirits were obtained in small quantities. The process was introduced in France, Spain and Italy by 1100 AD and to Scotland by 1600 AD. However these stills were not suitable for providing large quantities of spirits even had there been the necessary surplus of material for fermentation.

During the 17th century the rapid rise in production of sugar cane, especially in the West Indies, of grapes and wine in France and Spain and barley in Northern Europe including the British Isles led to a number of fermentable products. This was associated with improvements in the manufacture of stills. Suitable stills for the large scale continuous recovery of alcohols, liquors were devised by Blaise Pascal and Desmaré in France and Aperson Colclough in England by the beginning of the 18th century. Their bubble-trap towers are the basis of modern industrial stills.

Holland also produced quantities of spirits. Franciscus de la Boe (1644-1671) Professor of Medicine at the University of Leyden detailed foreign imports in

spice to produce a domestic medicine. The preparation caught on. British soldiers and galleys brought back the preparation to England. In the reign of Queen Anne (1702-1714) spices including gum resin alcohol were used while spices produced in England were found less heavily. There was a rapid and substantial rise in drinkmakers as they departed by Hagarth.

Spices were being produced in the British West Indies in the 17th century and by 1667 they were known as 'rum'. The start of the late 17th and early 18th centuries led to an increase in British Colonial Possessions and power in the West Indies. It also led to the nearly continuous presence of the Royal Navy. The colonies rapidly became the supplier of spices in the Service which is now known as a famous market.

There are frequent references to 'Mojito' as naval medical records. Churchill's expedition to the West Indies were so affected in 1655. It was often found as a maintenance of many. It occurred in epidemics and may well have been due to the fever caused by a deficiency of thiamine. Vincent R. Williams Cookburn, who was physician to the Chesapeake Service in the Mediterranean in 1781, recognized the maintenance of Mojito and such as drink dry drink (a. they call them).

In 1331 1 part of wine or 1 part of rum was offered as themselves to beer. This was probably not a matter of individual choice but controlling water, beer being based on the House System, was in the Mediterranean and then at the West Indies. The rum was determined by the availability of such beverages. Indeed this was only formal recognition of arrangements which dated in the Mediterranean at least from as early as 1781.

However it seemed gradually to be a position to come run as well as other beverages. It may well be that men often could purchase spices on top of their daily (first) returns. In 1781 the Secretary of the Admiralty understood that if the command did not require their full measure of beer they were to receive a such allowance as beer.

In 1789 Admiral Vernon went to the West Indies. When he arrived he was supplied in the search for of drinkmakers too widely concerning an HM Service. He examined the requests on methods of drinking rum. The result was an order of 21 August 1780 which introduced what became known as 'grog' after the Admiral's nick-name Old Groggum on account of his water proof boardwalk. A popular song commemorates his memory:

A flaggy boat on deck he drove,
And filled it to the brim,
Such drink the Barbado's patient crew
And such the Gods shall drink
The sacred wine which Warrant won
Was dratched with the cane
And hence no rummer passed one there
And Grog drives on more

In 1850 the mean of men was reduced to 1 of a pint a day and the evening meal was abolished. In 1860 the strength of men was fixed at 4.5 under proof (the men usually brought spirit at 70 under proof). In 1881 the issue of spirits to officers and those under 20 years of age was stopped.

While the naval rating could and often did drink to excess while ashore after 1850 a humane attempt to get enough alcohol to cause damage while ashore. The amount of sea time and restriction on shore leave may well have given the rating little opportunity to become addicted to or otherwise damaged by alcohol except by accident while ashore. This was not so for the officers who had only access to alcohol at the mess/dinner table and were not free to go to any the doctor suffered the ill-effects of alcohol, addiction and physical damage.

However, even the redistribution of beer and the difficulty in controlling the issue and consumption of rum and beer in Chief's and PO's messes there may be a strong incidence of alcoholism due to alcohol, often attributed to the true cause of the affliction is not known, or is overlooked.

The United States Navy: 1840-1945

In 1408 the USN allowed men who refused their pay ration an extra a day compensation. A number of officers encouraged this. Then the Commander of the USS North Carolina in 1779 reported badly punctured and not a single man normal during her long cruise in the Pacific largely he thought because her company of 400 men had consumed their pay ration.

One of the features of Boston's Open Temperance period of 1845 was the total and complete compliance of the USS Delac the training ship of the Charleston Navy Yard (perhaps they turned out for a parade irrespective of its cause/direct). When the crack USS Maryland visited India so many of her men were pledged teetotalers that French Officers, and she should change her name.

In 1842 the USN abolished spirit issues for ashore men, restricting alcohol to the officers (unofficially named) messes.

Then in 1814 the famous General Order 99 was issued by Secretary of the Navy Joseph Smith. As a fair minded soldier he took a dim view of the anomaly of drinking alcohol to ashore men and allowing it to the officers who were men. He was backed by President Wilson and the Navy Surgeon General. He was used to enjoy the cartoon showing him as Sir Joseph Admiral of the USS Great Pure Puritan sailing.

"When I was a lad I preferred rum
On the fearful effects of the Demon Rum
I seemed to dilly with the dazed light
And I never saw a bottle of champagne or all
I kept away from the grating men
And now I am the ruler of the USN"

INTRODUCTION

Alcohol (ethyl alcohol ethanol) if used in moderation and with care is one of the pleasures of life. It is at taken in excess and conclusively dangerous. The nature of the drug and its effects at various dosages should be more widely known. The necessity for strict control of its consumption within a disciplined Service is then obvious.

The rapid nature of taking alcohol on the Service by almost everyone leads to delays in and overreactions to maintain the unpleasant and untimorous effects. Doctors are no better than other groups in this respect.

The Pharmacology of Alcohol

Alcohol is one of a group of drugs which can produce general anesthesia. The first effect on taking the drug is a feeling of well being and increased confidence. This ends in the stage efficiency in performing skilled tasks (including those requiring careful judgment) is impaired. As the amount consumed increases, muscular coordination becomes apparent and eventually the subject may be helpless. As or soon after this stage the subject may become unconscious and exhibit all respiratory failure.

The degree of unconscious is related to the blood alcohol level. While the experienced heavy drinker is usually able to control the degree of his unconscious, even he will fall from time to time.

It should be evident that a bottle of whisky contains 240 grams of alcohol. The average English beer per pint contains about 12-14 grams of alcohol. Many strong beer contain up to 35 grams per pint (eg. Tiger Beer).

The quantity of alcohol which can be metabolized is constant for a given individual and depends upon his body weight, and his tolerance. The heavy drinker may be able to metabolize more per unit of body weight per unit of time than the casual drinker. But the difference is not large and unless the heavy drinker's tolerance can fall with consequent drinking needs. The usual figures for alcohol metabolism for the average 70 kg. male is 10-15 ml. an hour or 240-360 ml. a day — the equivalent of 1-1½ bottles of whisky a day. Such quantities may if taken rapidly throughout the 24 hours result in dangerously high unconscious. However with this quantity of alcohol morning shakes are usual and frank unconscious later in the day is the rule. Schell and Finner (1955) report that some of their volunteers could metabolize up to 460 ml. a day (equal to two bottles of whisky). However, it only caused slight variations in their in relation to casual frank unconscious. Most people taking more than 64 bottles of whisky or 12-16L or 32 pints of strong beer are very likely to be dependent upon alcohol.

Alcohol is rapidly absorbed from the empty stomach and upper bowel. Food may delay absorption but of course if drinking is prolonged even a meal does not prevent unconscious.

Typical figures for the blood alcohol after rapid ingestion are:

64 grams of alcohol (or 4 oz. 4 single whiskies)

67-67 mg % on empty stomach

30-31 mg % after a meal

64 grams of alcohol (or 1½ pints (flag) beer)

41-49 mg % on empty stomach

23-25 mg % after a meal

The concentration of the urine and breath bear a definite ratio to the concentration of alcohol in the blood and alcohol levels can be estimated indirectly in this way.

In England it will be an offence to drive a car while one's blood alcohol exceeds 35 mg. per 100 ml. of blood. Such a level may be reached after 4 single whiskies or 1½ pints of beer. It should be remembered that having taken the smallest one cannot consume more than 1½ single whiskies or 1 pint of beer at least without further raising one's blood alcohol level.

The Metabolism of Alcohol

Alcohol is oxidised to acetaldehyde by the enzyme alcohol dehydrogenase, nearly all of which is in the liver. Acetaldehyde is then converted to acetylcoenzyme A, which can be metabolised for the synthesis of sugar, non essential amino acids and fats or can be metabolised via the tricarballic cycle to yield energy (carbon dioxide and water). The conversion of alcohol to acetylcoenzyme A can be blocked by disulfiram (Antabuse).

The Clinical Effects of Alcohol

(a) Acute Intoxication

This may lead to:

- (i) Trauma (e.g. accidents) including self-harm and homicides
- (ii) Acute alcoholic poisoning
- (iii) Respiratory and circulatory distress
- (iv) Domestic distress
- (v) Sexual promiscuity

Such intoxication can occur in:

- (i) The occasional heavy drinker
- (ii) The regular heavy drinker
- (iii) The binge or episodic heavy drinker (hypomania)
- (iv) The alcoholic chronic alcoholic

(b) Pathological Intoxication

(i) Chronic Intoxication (chronic alcoholism)

This may give a wide variety of conditions:

- (a) Due to the direct metabolism of alcohol
 - (i) Thiamin (vit. B₁)
 - (ii) Fats (vit. B₁₂)
 - (iii) Alcohol's hallucinosis
 - (iv) Delirium tremens

- (a) Other "psychiatric" states
 - (a) Alcoholic personality states
 - (b) Alcoholic character deterioration
 - (c) Self-destructive including suicide
 - (a) Nutritional deficiency disorders
 - A. Due to vitamin deficiencies
 - (a) Scurvy and pellagra
 - (b) Beri beri
 - (c) The neuro-musculopathies
 - 1. The acute neuro-musculopathy
 - (a) Wernicke's encephalopathy
 - (b) Neuritic and delirious encephalopathy
 - 2. The chronic neuro-musculopathy
 - (a) Korsakow's psychosis
 - (b) Chronic alcoholic cerebral deterioration
 - 3. Alcoholic peripheral neuropathy (often associated with other alcoholic states)
 - B. Due to deficiency of "haptogenic" factors
 - (a) Trypt. liver
 - (b) Alcoholic cirrhosis of liver
- (a) Other conditions
 - (a) Alcoholic cardiomyopathy (including beri beri)
 - (b) Acute and chronic pancreas
 - (c) Chronic relapsing pneumonitis
 - (d) Primary biliary
 - (e) Alkaloid induced gout
 - (f) Alkaloid induced myopathy

The effects of Acute Intoxication

Acute intoxication as a factor in

- (a) Accidents
- (b) Disciplinary and criminal offenses
- (c) Acute alcoholic poisoning
- (d) Domestic violence
- (e) Personality effect leading to V.D. (often the victim's suicide though not self-inflicted)

(a) Accidents

Crowe and Allen (1941) found that every one of a group of 64 prisoners admitted to a Minnesota hospital between midnight and six a.m. was intoxicated.

In Thomas (Goldberg, 1957) the blood alcohol levels of 423 drivers involved in accidents were compared with other drivers who happened to pass the same way at a similar time of day in a similar type of car. (Mixed blood alcohol was more common in drivers involved in the accidents)

In 1946 four fatal accidents have been associated with road-traffic alcohol in Singapore among naval personnel:

- (i) Road traffic accident (1900 Blood Alcohol 137 mg. %).
- (ii) Fall off gangway (increased alcohol Blood Alcohol 219 mg. %).
- (iii) Fumad decreased Blood Alcohol 193 mg. %.
- (iv) Fall from 2nd floor of ship at 0400 Blood Alcohol 125 mg. %.

In addition at least 30 cases of serious injury have been admitted to Raffles Hospital in 1946 in which the victim appeared to have been under the influence of alcohol.

(ii) Discipline and Criminal Offences

In 1946 the author saw 14 men prior to court-martial for offences committed under the influence of alcohol:

(a) Acute Alcoholic Poisoning

In 1945 one and in 1946 two naval ratings died of acute alcoholic poisoning. Their blood alcohol levels were 632 mg. %, 791 mg. % and 435 mg. %.

(b) Domestic Distress

It is difficult to estimate the domestic distress caused by alcohol as this is brought to the attention of welfare authorities rather than the medical services.

(c) Proximity often leading to F.O.

Enquiry on the station showed that virtually all men concerned with prostitution had been drinking.

(iii) Pathological Intoxication

It is said, especially in former discussions, that some people may become acutely disturbed after taking relatively small quantities of alcohol and it is usually an act of aggression which brings such a person to psychiatric notice.

(iv) Chronic Alcoholism (Lefkowitz 1940 Kessel and Walton 1943)

The reasons why a person becomes a regular heavy drinker are numerous and are not the same as those which lead him to become an alcoholic addict. One usually passes from a regular heavy drinker to alcoholic addict by virtue of the pharmacological effects of the drug and remains an alcoholic addict because of the disturbing features of withdrawal! However, once withdrawal one again takes up alcohol for the same reason one became a regular heavy drinker.

Recommendations

The current concept of alcoholism extending not only to the subjective and physical damage stages but to the stages preceding such changes, is again a recommendation to the benefit of the alcoholic — as long as the patient's willingness to also see the steps for the avoidance of responsibility for collapse.

The physician in his proper capacities to help and understand must not fall victim to the rationalization of those he is trying to help.

Is Alcohol a Psychological Agent?

To speak of a cause as frequently to our ears conveys — to further speak of cause, as — 'psychological' — is again to confuse cause and effect.

It is often said that the cause of alcoholism is social pressure. By analogy the cause of alcoholism is alcohol. As with any noxious agent, be it bacteria or drug, the outcome of contact upon depends upon many factors. The effect may be negligible or produce devastating damage and even death. With alcoholism, even more with infectious diseases, there is the problem of the choice of the individual. Because the past cannot be altered there arises the view that with such a noxious agent the future for both that man and others cannot be altered. Or that in the case where a critical choice was to be made it was not possible to make any other choice. This view again is a misanthropic favourite to the sober.

Before discussing the effects of chronic intoxication one needs to be clear on the types of drinkers and on the definitions of these one would call chronic drinkers.

A simple classification is

- 1 Teetotalers: Those who do not drink.
- 2 Abstemious: Those who once drank but do so no longer.
- 3 Social drinkers: Such people usually drink moderately and do not take alcohol every day. They may however, on occasion get drunk.
- 4 Regular drinkers:
 - (a) Those who do not reach more than a stage of mild intoxication.
 - (b) Those who reach a stage of more than mild intoxication — daily heavy regular drinkers.
 - (c) Those dependent on alcohol i.e. those who would develop symptoms if alcohol was withdrawn abruptly.
 - (d) Those who while not dependent are doing themselves physical damage e.g. cirrhosis of the liver.

It is categories (c) and (d) of 4 that are usually described as chronic drinkers. Another criterion for the diagnosis of chronic alcoholism is that the patient cannot leave alcohol alone.

Some definitions of alcoholism appear too wide. That of the Expert Committee of the World Health Organisation is

Alcoholism is that chronic disease where dependence on alcohol has resulted such a degree that they have noticeable mental impairment or interference with their personal and public life; that also physical deterioration and thus mental and economic failure; and also show prominent signs of such dependence.

This includes anybody who takes a swiggy through alcohol.

Moller and Fergusson (1964) from their experience of Army and Navy alcoholism suggest a similar classification for Service patients.

The Causes of Alcoholism — Physical Causes

(a) The Allege Theory

The Allego theory of alcoholism holds that an unknown constitutional weakness

may lead men to be alcoholics. This implies that the alcoholic is, in respect of his relationship with alcohol, different from the majority of men.

This theory has another implication that for the alcoholic one drink is enough to cause loss of control. Not only has this been disproved experimentally (Garry, 1964) but it is evident that if there is loss of control after one drink, there must be loss of control before the first drink is taken.

(c) Social and Cultural Theories

The social aspects of alcoholism are usually described under these headings — customs, appearance and example.

It is to be regretted that all three are so touchy at work in the Services. One is expected to take alcohol and inevitably while young and single to take too much. Not to drink is to be left outside of the community.

Alcohol is freely available in the Services and often at 'very low' rates. All ranks have places provided where they can drink and it is no coincidence that they are usually the most attractive places available for general use.

(d) Personality Structure

It has already been suggested that the heavy drinker in the Services has an immature personality. However the officers, and physically damaged in the Services are often smart, responsible people who cannot — except by very degrees and limited means — be regarded as immature.

On the other hand they do seem to have become self-indulgent and to have little capacity to pass the time outside of work and alcohol but too often one refers to 'regimental personality in someone who has taken alcohol for many years and will have developed an alcoholic self-indulgent pattern of behaviour.

Perhaps the best thing is to realise that many reasons lead to a man taking alcohol and many lead to his drinking it. It is the 'sum' of these positive and negative factors which determines if a man becomes a heavy drinker. Once a heavy regular drinker's habits are formed the ways are set for the development of addiction and physical damage.

It should not be forgotten that alcohol reduces self-control over taking more alcohol and by the time one is taking alcohol regularly and heavily the physiological effect of alcohol alone can lead to the stage of addiction.

Indeed in discussing the causes of alcoholism it may be that people are searching in the wrong place. It may be the important question is not as why people do not become alcoholics.

CLINICAL FEATURES OF CHRONIC ALCOHOLISM

Goldstein (1962) describes

(1) The pre-alcoholic phase. During this phase the subject actively seeks the lift he feels alcohol gives him. This is associated with a rising alcohol consumption. While heavy drinking is the rule, fresh excitement does not often occur. This stage may last from a few months to many years.

(2) The pre-dramatic stage. However the subject reaches the stage of regular heavy drinking starting in the morning. There now occur episodes of alcoholic excess — blackouts or regular convulsions. At about this time there is reticentness

drinking, preoccupation and guilt over taking alcohol. Again this stage lasts for a few months to 4-5 years.

(3) *The eroded phase*. There is loss of control occasioned by taking alcohol leading to bouts of drinking. At this stage the alcoholic continues his drinking habits with alcoholic beverages. His behaviour degenerates and his conduct leads him in contact with social agencies and the psychiatric clinic under pressure from relatives and others. There may be loss of jobs and social circles. He may cause disintegration of the family. His physical health may suffer and he comes to hospital care. By this time he is drinking all day. This stage lasts 6-12 months.

(4) *The chronic phase*. There is medical and often permanent physical damage with physical and social deterioration. Delirium tremens and other delusions lead and the alcoholic accepts himself for what he is.

It should be emphasized that by the time he alcoholic has reached the pre-delirium stage he may well be addicted to alcohol. At this stage on hospital admission, chronic withdrawal symptoms are the rule in serious patients. Already by the pre-delirium stage efficiency for much of the day will be below an acceptable standard.

The experience that all alcohol addicts have long histories of heavy drinking is, however, misleading. In 1966 three young men (ages 19, 21 and 22) each developed delirium tremens after hours. They were not able to drink heavily in their respective shops. Each spent 10-12 days, alone drinking and consumed daily over 250 g of alcohol mostly as beer. On return to their shop and going to use the quantity of alcohol they could get felt dizzy and each developed delirium after 24 hours of use.

It may be that a certain level of blood alcohol is signalled for a minimum time for the development of withdrawal symptoms. While the quantity of alcohol used in the young heavy drinker may be very large for the substance developed in the long standing older heavy drinker may have a protective function. However the older drinker is a more senior man with knowledge of the ropes who is able to get adequate quantities of alcohol and thus prevent the development of withdrawal symptoms.

THE TREATMENT OF ALCOHOLISM

The first step is the withdrawal of alcohol. This can be done abruptly. If the patient does not develop more than the shakes and apprehensions, little specific treatment is needed. After taking blood for investigation, vitamin therapy is started either orally or parentally — usually of mixed high potency products. A high protein diet and plenty of exercises help over the initial stages.

If more severe withdrawal symptoms occur or appear (trembling, e.g. hallucinations, delirium, delusional ideas, clonus of consciousness) there can easily be controlled by the prompt administration of chlorazepate (diazepam) 20-40 mg, oral and 20-40 mg, hourly. This dose will prevent or relieve even severe withdrawal symptoms. It is much more effective than legalminal. The drug is then reduced by 10-20 mg daily until all symptoms of withdrawal. At this stage most alcoholics need

services are extended to UK where the system outlined by Miller and Ferguson (1964) is followed. This system is to encourage the patient to accept the implications of his alcohol addiction. He is integrated into a group and these groups are managed with *Alcoholics Anonymous*. Group psychotherapy and appropriate handling and advice to patients follows. If and when the patient is discharged he has to go to a public appointment and there will not be a place where alcohol is easily available. All cases are followed up for at least three years. The introduction of medical services and a medical appointment of the management of Sarnoff life for the alcoholic is emphasized.

The Withdrawal Syndrome

Johnson (1961) suggests the following classification for the acute brain syndrome associated with uncomplicated alcoholism.

1. Tremulous State

The typical syndrome in blood alcohol levels in the patient will provide a tentative diagnosis. Usually this is noticed in the morning on rising and is caused by a drink or two. There may be associated palpitations, sweating, feeling of hotness and palpitations. There is a subjective feeling of apprehension. It can occur within 12 hours of the last drink and is the first withdrawal state to be observed. The same syndrome occurs when alcohol is withdrawn in hospital. It is evidence of alcoholic addiction. Tremulous syndrome may be the only withdrawal effect noticed. It may be interpreted by giving alcohol, sedatives or chlorazepate (Librium). As soon as the patient gets over his withdrawal symptoms with alcohol he has recovered. The abrupt termination of such withdrawal effects should give rise to the suspicion of halloes or unquipped alcohol. If no more dramatic features of withdrawal occur they are able to do without alcohol or moderate enough a proper diet and rest.

2.0. Alcoholic Hallucinations

While Meyer Green et al (1968) say that alcoholic hallucinations are much more than delirium tremens in Sarnoff practice they appear to be equally common (Wells 1971). The auditory hallucinations and at times delirium can occur on withdrawal being withdrawn from a patient, but they often occur in situations where the alcohol intake is reduced but not stopped entirely as when a man who drinks heavily before goes to sea and can only get a limited supply of alcohol. The hallucinations may or may not be associated with a tremulous state. The predominant symptoms are auditory hallucinations and delirium in a state of relatively clear consciousness. Usually the patient is correctly orientated but may appear preoccupied with his experiences. There are often a persecutory state and the paranoid patient may be fragmentary or systematized.

In Sarnoff practice the association has rarely concerned with alcoholism or psychosis associated has not predominantly about other conditions of being a homosexual. This did not appear to be linked with sexual homosexual behaviour in the patient's past. While such cases are often described as being similar to

or explicitly related to schizophrenia (e.g., schizophreniform there is no evidence of schizophrenic thought disorder, volitional disorder or affective disorder). How ever, occasionally a prolonged hallucinatory state is observed (e.g.,

Case history: A man of 33 was known to be drinking very heavily. He developed an alcoholic myopathy which responded to withdrawal of alcohol; the dose was very large and the hallucinations persisted. When over a year later he met his first true hallucinated (the most of that time) he reported no other obvious features. He believed it alcohol caused the majority of the symptoms but these did not disappear, and the patient was given chlorpromazine.

Such states are of considerable theoretical interest. The association between temporal lobe epilepsy and a schizophrenia, like there has been described (Lewin, 1952). The acute schizophrenias of old age may also result from organic brain disease (Roy and Roth, 1965). A similar finding of symptomatic schizophrenias is seen in alcoholism (Hendelin, 1965). It is tempting therefore to speak of symptomatic, schizophrenias and alcoholic schizophrenias. The former are by no means a small group. It often happens in forensic practice that alcoholic psychosis is called schizophrenia and the diagnosis is then left to coincide with cases of alcoholism. If the concept of the symptomatic schizophrenias is used then the proper assessment of the patient becomes possible.

(a) Delirium Tremens

This is the most potent and best known of the withdrawal effects of alcohol and is brought about by the sudden withdrawal of alcohol (e.g., in the event of admission to hospital either for physical disease or injury or the treatment of alcoholism). In the Severns it is often due to going to sea or to a forward area where alcohol is less freely available.

Within twelve hours of the withdrawal of alcohol the onset of tremulous epileptoid seizures occurs. A sign of developing delirium is the pronounced appearance and physical withdrawal of the patient even though unconscious and comatose is not described. Usually by the second night after admission prodromal symptoms of a delirious character appear. The patient gets worse of course when trying to sleep as is described by nightmares. By the third night he is unable to sleep and is disturbed by visual, auditory and tactile illusions and hallucinations. Comatoseness is described as a varying degree. The delirious and hallucinations are worse by night and visual disturbances are often absent by day. Some patients, even while greatly disturbed, are able to tell those about them that they are having a bout of DT's. The auditory hallucinations are usually of people talking to the patient such as in Severn patients about relatives and military or naval personnel. Visual disturbances in Severn patients are usually of insects. The delirium usually lasts from 2 to 5 days. Its duration does not appear to be affected by chlorpromazine and thiazines nor do prophylaxis, women supplements prevent the delirium (Jell et al., 1952). Lapsard considers the intensity of the symptoms and the patient is more easily nursed and less liable to violence. Lapsard appears to act as a pharmacological substitute for alcohol and very shortens the period of delirium.

(vi) Withdrawal of *Fits*

Alcoholic subjects are liable to grand mal seizures 14 hours to 7 days after the abrupt withdrawal of alcohol. These fits are more serious continuers if they occur when a patient is admitted to hospital for a head injury. They do not appear common in forensic practice. Such fits are much more common after such doses of barbiturates and similar drugs.

(vi) Other psychiatric syndromes associated with Alcoholism

(a) *Alcoholic personal reactions*. The alcoholic husband may become very badly jealous of his wife. He is often sexually disturbed by alcoholic intoxication yet at the same time has potent. His wife will often reject him. This may lead to quarrels and physical assault. After a time he may develop delusions that her appearance, conduct or speech indicates premeditation with a lover. These delusions usually clear up on withdrawal of alcohol. It has not been noted that such a paranoid reaction is associated with alcoholic hallucinosis.

In the Service in single men the alcohol may develop morbid suspicions of his comrades and superiors. This reaction is not associated with alcoholic hallucinosis and clears on withdrawal of alcohol.

(b) *Financial distress and suicide*. In 1945 King and Garrahan were men having inflated egos on themselves in various ways. All were disoriented and their behaviour was attention seeking and manipulative and all had taken alcohol before the war. All were returned to duty and none have developed mental illness subsequently. The term "suicidal gesture or attempt" is best avoided as it suggests a dangerous state of affairs.

Recent studies (1967) suggest that alcohol plays an important part in attempted suicide. But in those who harm or attempt to harm themselves include such a variety of social pathology and disturbed individuals it is difficult to draw conclusions. Certainly in Service psychiatric practice very few patients with self-inflicted injuries are usually of this variety all have taken alcohol just prior to the act. Simple observation is sufficient to reduce self control and facilitate self injury in angry or unhappy people.

HEPATIC CHANGES ASSOCIATED WITH EXCESSIVE ALCOHOLIC INTAKE

The alcoholic often eats a diet deficient in protein and vitamins. It has been shown that this led to a diet similar to that of alcoholics develop hepatic necrosis and fatty change (Kornblit *et al.* 1953). On the other hand, the fatty liver of Korschbaker is not apparently pre-nebrotic, and it can be present in experimental animals without fibrosis (Hindler and Dolan, 1956). It may then appear to be little correlation between fatty change and the clinical state. Corbous is reported to concern in men who have never had a fatty liver (Garrahan and Popper 1959).

However, cytochrome fatty change fatty cysts, hyaline deposits in the liver cells and fatty carbonous with sometimes small nodules can be produced experimentally on a few proteins, low vitamin diet. These liver changes have been

continued to a nutritional, hepatogen deficiency (Hawcock 1961). In some people fatty change has not been shown to progress directly to cirrhosis unless other changes are present. Such changes viz hepatocellular necrosis with a poly morphonuclear reaction as seen in the liver of the alcoholic, but never in a germ-free animal (Blacklock 1961).

Alcohol has a high caloric value (1 g alcohol = 7 calories) and as alcoholics can obtain over 1200 calories a day from alcohol alone. This minimizes the demands for hepatogen (Bost *et al* 1949). Alcohol may also increase choline requirements in other ways (Kilmer 1961).

Following the development of cirrhosis there is usually severe fatty change and the liver may be enlarged. During periods of decompensation as toxic hepatitis may be superimposed often as the result of a dietrich. The liver cells necrose and the cytoplasm contains the alcoholic hyaline of Mallory. Lymphocyte infiltration and Kupfer cell proliferation are prominent and are related to cellular necrosis. Later growth of fibrous tissue divide up the liver into small regular uniformly distributed nodules. There is an inverse relation day between fibrosis and fatty change (Blacklock 1961).

While the liver may be large initially it tends to shrink as fibrosis develops. It was of interest to observe that in Gambia patients a very large liver was a feature even after repeated episodes of jaundice and several spells of delirious tremors.

The clinical features of cirrhosis are hepatomegaly, jaundice, oedema and ascites. In alcoholic cirrhosis, gastric intestinal bleeding is not common as portal hypertension occurs in less than 10 per cent of cases. Other signs of malnutrition and vitamin deficiency are apparent including peripheral oedema. Folate deficiency when mild, vascular spiders and telangiectases are very common. Associated with liver failure are glycosuria, gonadal atrophy, enlarged thymic pariet glands and Desquignesi's configuration.

Following an alcoholic dietrich resulting in cirrhosis added from gastric or intestinal from alcohol to a malnourished or poorly fed individual symptoms including delirious tremors may well occur. It is important to realize that a similar dietrich may precipitate hepatic coma (Phillips *et al* 1952). It is necessary to distinguish clearly between these two conditions in their treatment and quick relief.

	Delirious Tremors	Hepatic Coma
Consciousness	Confused but orientable	Lethargy and coma
Tremor	Fine	Flapping
Mental content	Hallucinations and delusions	Parity of ideas
Response to chlorpromazine	Rapid	Poor
Blood urea	Low	Raised
Factor hepatogen	No	Present

Delirious tremors and pre-hepatic coma may co-exist

ALCOHOLIC CIRRHOSIS

(Scheff et al. 1962)

Etiopathogenesis

Cirrhosis is 2-3 times as frequent in alcoholics as in non-alcoholics. It is especially a disease of those whose occupation exposes them to alcohol.

Pathology

There is severe fatty change. During periods of decompensation an acute hepatitis or superimposed flare may be the result of a disturbance. The liver cells necrose and the cytoplasm contains the alcoholic hyaline of Mallory. Lymphocytic infiltrates, and Kupfer cell proliferation are prominent and are related to hepatic cellular necrosis. Later, strands of fibrous tissue divide up the liver into small, regularly distributed nodules. There is no inverse relationship between disease and fatty change.

Clinical Features

Cirrhosis is often recognized by the patient and is noted accidentally on physical examination or at the post mortem. It may be suspected on finding abnormally reflexion of the hepatomegaly spider veins in palmar erythema. Other findings may be clubbing of the fingers, gynecomastia and enlargement of the parotid glands.

In many patients the initial symptoms are due to complications and may be of sudden onset. These are hemorrhages or ascites, prothrombin defect and edema. Mental and neurological symptoms, if hepatic encephalopathy are often precipitated by a complicating factor such as gastric intestinal hemorrhage. However gastric intestinal hemorrhage appears relatively uncommon in alcoholic cirrhosis and is apparently not often seen in chronic practice.

An enlarged liver is a frequent finding with chronic alcoholic patients. When liver biopsy is done the usual change is of a fatty liver. As the age of chronic patients is relatively young, it may be that fully developed cirrhosis is not seen.

DISORDERS OF THE STOMACH AND DUODENUM ASSOCIATED WITH ALCOHOL

(Enck et al. & Keay 1963)

Acute gastric biopsy suggestive patients

Acute gastritis usually follows on alcoholic debauch. Direct observation shows erythema, erosions and the excretion of dark and viscous mucus with occasional hemorrhage occurring on a day or two. The signs of acute gastritis can often however without symptoms.

Chronic gastritis

The complicated chronic alcoholism does not lead to chronic gastritis. However, if the alcoholism is associated with malnutrition, atrophy of the liver or pancreatitis then a frequently occurs.

Feigning sobriety

The contention of opinion among Soviet specialists is that heavy smoking and drinking retard the healing of peptic ulcers. Of course, heavy smokers tend to be heavy drinkers and vice versa. Both tend to eat poorly and irregularly.

ACUTE AND CHRONIC RELAPSING PANCREATITIS

(Tinkov & Korotk 1953)

Acute pancreatitis occurs in alcoholics, and in some cases an appropriate post-mortem was noted in the regular heavy drinkers or alcoholics (Schwartz and Katz 1953). It is usually the relapsing or chronic form. The individual usually has a history of varying intensity and may not make medical sense, the pain being put down to indigestion. The individual usually has often associated with vomiting and increased painless stools attack lasting a few hours or days.

Pathologically there may be any combination of edema, necrosis, hemorrhage, pseudocysts or even abscesses.

If diabetes progresses far enough the classical signs of chronic pancreatitis diabetes, steatorrhea and calcification appear.

Pancreatitis associated with alcoholism does not appear to contain a fatality pattern.

ALCOHOLISM AND IRON METABOLISM

Deviations of iron metabolism are associated with excessive consumption of alcohol. Sheline (1953) in his monograph on haemochromatosis pointed out the frequency of alcoholism.

Cook and Asch (1954) and Cook and Egan (1954) have shown that some patients with alcoholic cirrhosis eventually develop severe haemochromatosis. This has been confirmed at autopsy by Byrnes and Tarule (1954). The pathological picture may be very similar to that seen in haemochromatosis (MacDonald and Maloney 1955).

It is suggested that alcoholic beverages contain large quantities of iron. MacDonald and Maloney (1955) (Waller and Anderson 1953) that alcohol may mask the absorption of iron iron (Chapman et al. 1954) or that paraneuro-sterility due to prostatic atrophy associated with alcoholism causes the delayed uptake of iron (Davis and Radwagh 1953).

ALCOHOL AND THE HEART

Frost (1938 1941 1954) Baylen (1955) and Baylen and Robinson (1954) among others have drawn attention to the relative frequency of alcoholic heart disease. Frequently there is failure to diagnose the condition, usually it is attributed to coronary artery disease.

Reports of symptoms of alcoholic cardiomyopathy occur. The Medical News (1954) reports an outbreak in Montreal. There were forty cases of cardiomyopathy with various deaths among the heavy beer drinkers of the city. Frost describes two types of alcoholic heart disease.

Heart Ache

In alcoholism there is both a reduced capacity of myocardium to do otherwise normally and an increase in the demand for increase because of the increased carbohydrate metabolism.

There is a hyperkæmic circulation and early congestive failure. There is an absence of cardiac arrhythmias. The ECG is not specific and changes such as depression of the T wave are unconvincing and agree with treatment.

The condition promptly responds to rest, withdrawal of alcohol and administration of vitamins.

Alcoholic cardiomyopathy

This condition is said to be of a more insidious onset. The patient may be there with complaint of palpitations, breathlessness and pronounced discomfort. These symptoms may be dismissed as due to obesity or coronary insufficiency.

Cardiac arrhythmias frequently occur and if the usual causes are excluded alcoholic myopathy should be suspected. Later signs are those of congestive failure and hyperkæmic circulation.

Kramer (1959) describes three distinctive types of ECG changes in the T wave. These changes are usually best seen in the precordial leads. They are (i) cloven T wave, (ii) the double T wave — a distinctive symmetrical negative deflection and, (iii) the unquen T wave — tall narrow and peaked.

This type of heart disease is said to respond more slowly than earlier. The standard methods of treatment of congestive failure may be necessary. There may be other associated evidence of alcoholic damage.

General Features of Alcoholic Heart Disease

Over a period of 11 months 11 cases of alcoholic heart disease were seen in RMH Singapore. Frequently such patients had already received injections of vitamins before admission or transfer to the hospital.

There is difficulty in deciding if hepatomegaly in alcoholics, heart disease is due to alcoholic damage to the liver or is the effect of congestive heart failure. In the absence of a liver biopsy it may not be possible to decide this.

The specific changes in the ECG described by Kramer (1959, 1960) were not seen. In several cases there was prolongation of the PR interval and flattening or inversion of T waves in some but not all leads. Again cardiac dysrhythmias were not a feature. It may be that the relevant parts of these patients occurred far the absence of such findings.

THE NEUROENCEPHALOPATHIES ASSOCIATED WITH ALCOHOL

The acute encephalopathies (Wernicke's encephalopathy, Thiamine Deficiency Encephalopathy).

In 1911 Karl Wernicke described an acute encephalopathy which he named. The clinical features were of an insidious onset associated with vomiting. There were disturbances of sleep, of vision with nystagmus and of consciousness. These mental disturbances could progress to a comatose state and even coma.

Diplopia, ataxias, and ophthalmoplegia beginning with lateral rectus palsy occurs which was progress to complete ophthalmoplegia. There may be ataxia associated with signs of a peripheral neuropathy.

Pathologically there are hemorrhages, and degenerative lesions in the medial thalamic nuclei, mammillary bodies, around the third and fourth ventricles, the cranial nerve nuclei and the posterior longitudinal bundle.

Bedlam (1947) reviewed the earlier literature and described cases of Wernicke's ophthalmoplegia from his extensive clinical material mostly drawn from prisoners of war suffering from malnutrition. He describes the main clinical features as gastro-intestinal symptoms, polyneuritis, ataxia, brain stem signs and psychotic symptoms.

It became apparent that cases of a similar ophthalmoplegia were occurring in an ex-service military hospital. They occurred only among patients consuming very large quantities of alcohol. Seven such cases were seen in the period 1944-1948. Each case was probably not new because in *Servant Medicine* (Waller, 1958).

Jelliffe *et al.* (1948) described a syndrome which they called *Wernicke's and Delirium Ophthalmoplegia*. By analogy it might be better to call the cases described in this paper *Thiamine Deficiency Ophthalmoplegia* and reserve the term Wernicke's ophthalmoplegia for the more severe and focal disturbances.

Clinical Material

Of the seven patients, six were male and one female. Five of the six male patients were ex-servicemen. The age range of the male patients was from 21-68 years, average age 45 and that of the female patient 45 years.

All the patients were known to drink very heavily. They were all fully employed at the time of their first admission and were able to afford even if they did not take an adequate diet.

Three patients were admitted to the psychiatric and four to the medical ward. All had ataxia and evidence of brain stem involvement.

Comments

Psychotic symptoms were relatively infrequent in this series (5 patients), probably a reflection of the relatively mild nature of the illness.

During the same period of time (25) other patients were admitted to the psychiatric and medical divisions of the hospital for alcoholism and/or the complications of an excessive alcoholism state. Thus, the present study of patients suffering from the effects of long standing excessive intake of alcohol showed signs of an acute ophthalmoplegia due to thiamine deficiency.

The series primarily was not always investigated; patients would often have been treated at their own part of stage and they with symptoms and only infrequently mentioned to the base hospital.

Treatment

The patients were given large doses of intramuscular thiamine, including thiamine and placed on a nutritious diet. Alcohol was completely withdrawn.

As is often experienced (Diplock, 1947) all symptoms, except those due to poly neuritis cleared dramatically.

Recovery

Seven patients representing 3 per cent of 127 alcoholic patients seen in an out-patient medical hospital in 1964-1966 developed an acute encephalopathy due to thiamine deficiency.

NECOTINIC ACID DEFICIENCY ENCEPHALOPATHY

Jelliffe *et al* (1961) have described a syndrome characterized by weakness and grouping reflexes, impaired rigidity of the extensoris and clonus of extensoris. The condition is said to respond to the administration of nicotine acid. There are often cerebral sensory defects.

Deficient protein and lysine may cause one of several acute encephalopathies but are described elsewhere in this report.

THE CHRONIC NEUROENCEPHALOPATHIES

(a) Korsakow's psychosis

This disorder may follow any of the acute cerebral deteriorations in the alcoholic, or it may occur as a slow deterioration in cerebral function. The syndrome has also been seen after oral gas poisoning, poisoning with heavy metals and various diseases of pregnancy and various deformities not associated with alcoholism.

The syndrome is described as a severe memory defect there being failure of recitation. There is therefore a failure of recent memory. The patient is apparently not very interested in over the defect of memory — the symptom called *amnesia*. Often present is an associated peripheral neuritis. The condition is thought to be due to multiple vitamin deficiencies and partial recovery may follow from withdrawal of alcohol and administration of vitamins.

(b) Chronic alcoholic deterioration

A gradual decline in an individual's standard of conduct may be associated with intellectual impairment and memory defect. There is often a change in personality towards irritability.

Probably there is cerebral damage of a diffuse type and constant atrophy. Recently some Italian authors have suggested that the cerebral damage is due to damage to the cerebral blood vessels (Bontlyon and Belluscio 1964).

The condition may improve with the withdrawal of alcohol and the administration of vitamins. The condition is seen in beriberi patients.

(c) Peripheral neuritis

The condition may be associated with any of the acute or chronic encephalopathies with other alcoholic damage e.g. psychosis, or on its own.

Clinically, incontinence and parasthesia are early features. There is loss of deep reflexes. Later there may be rigidity. There is clinical similarity between the polymyositis of alcoholism and diabetes. Possibly both are due to a disturbance with the carbohydrate metabolism of nerves.

There is usually an excellent response to various treatments and withdrawal of alcohol. However if repeated episodes occur permanent damage takes place.

(c) Chronic subdural haematomas

There is an accumulation of blood in the subdural space which is bilateral in half the cases. Its cause is not clear. The blood is absorbed between six weeks and eight months and granulation tissue and a fibrous film may grow over it. It is seen at any age but is most common in the elderly. Any condition which causes trauma and/or bleeding is associated with the condition e.g. rheumatoid arthritis.

The clinical picture is of a fluctuating but gradually deepening disturbance and confusion associated later with headache. Epilepsy is rare. Focal signs may be absent. If present they are likely to be a homonymous hemianopia with pupillary and sphincter of the iris on the left side. Papilloedema is often present. Transient cerebral pressure may confuse the picture in the alcoholic with Wernicke's encephalopathy.

There are changes in the EEG and angiography and on cinematography show characteristic signs. The CSF may be normal or show raised protein and xanthochromia.

PELLAGRA

Nausea and diarrhea may be associated with alcoholism. It may coexist with other vitamin and nutritional deficiencies.

Pathologically, there is damage to nerve cells and degeneration of spinal cord tracts especially of the posterior columns but also of cortico-spinal and corticospinal tracts.

Clinically there are in the early stages gastrointestinal disturbances especially diarrhea. This is associated with skin lesions usually symmetric on those parts exposed to the sun and later degeneration and thickening of skin. The tongue is covered with loss of epithelium. There is gross ataxia and parasympathetic neurological and psychiatric manifestations occur later. There may be mental impairment and delirium. Dysrhythmia, dysphagia, tremor and ataxia. Tremor refers may be sustained and planar without intention. Sensory changes are of pain and numbness in nerves with superficial numbness and anesthesia. Mental changes are variable and may be of mania or melancholia and progressing eventually into dementia. The neurological picture is not distinctive in Wernicke's encephalopathy. No cases of total pellagra have been seen in this practice.

THE DIFFERENTIAL DIAGNOSIS OF CONFUSIONAL STATES IN THE ALCOHOLIC

The differential diagnosis of confusional states and coma in the alcoholic can pose difficulties. The alcoholic has no immunity from such affliction as

cardiovascular accidents, cerebral trauma or acute head injury. However the following should always be considered:

1. Alcoholic Intoxication
2. Delirium Tremens
3. Chronic Subdural Hematoma
4. Hepatic Coma
5. Vitamin Deficiency Encephalopathies
 - a. Thiamine Deficiency (Wernicke's) Encephalopathy
 - b. Nicotinic Acid Deficiency Encephalopathy

OTHER CONDITIONS ASSOCIATED WITH ALCOHOL

- (a) Alcoholic Cardiomyopathy (This is diagnosed with heart but heart disease)
- (b) Acute and Chronic Gastritis
- (c) Chronic Relapsing Pancreatitis
- (d) Primary Biliary
- (e) Alcohol Induced Psoriasis
- (f) Alcohol Induced Myopathy

STATISTICS

Figures for previous years are not too reliable but an effort was made in 1960 to discover conditions due to or associated with alcohol.

	Age of Onset			All Causes		
	Male	Female	Total	Male	Female	Total
Psychiatric cases	8	11	19	12	18	30
Medical cases	5	9	14	3	13	16
Accidents (injured)	7	7	14	7	7	14
Deaths	7	3	10	7	7	14

	Alcohol		Other	
	Cases from 1960		Cases from 1960	
<i>Psychiatric Disorders</i>				
Delirium Tremens	3		2	
Hallucinations	2		4	
Phobias	5		—	
Periodical Reactors	3		—	
"Simple" Addictions	7		5	
	—		—	
	10		9	
<i>Medical Disorders</i>				
Alcoholic Heart Disease	5		6	
Peripheral Neuropathy	7		5	
Primary Biliary	1		—	
Hepatic Disease	3		4	
Wernicke's Encephalopathy	—		1	
	—		—	
	12		14	

www.bjv.com

The majority of patients admitted to BMH Singapore are from the Army, Navy and United Kingdom British Commonwealth and their dependants. Few R.A.F. patients are admitted.

The Navy has about one third as many men as the Air Force or the Army. The figures suggest that the Royal Navy has three times the rate of absentee casualties than the Air Officers' are inflicted by circumstances from the Royal Fleet Auxiliary. If this was taken into account the picture would be the same.

These results represent the tips of the iceberg. It is usually estimated that for every obvious alcoholic casualty there are in the same population about two drinking or heavily. If it is assumed that nearly all alcoholic casualties occur over 25 years of age and that this age group represents less than half the strength of the Fleet there could not be less than 200 very heavy drinkers in the Fleet at any one time, the majority of all deceased over 25 years of age.

Author: *Reprints and permission information is available at the publisher's website.*

Abstract

I am, held grateful to Professor Captain J. W. Walker, CBE, RFA, Royal Military College, Fort Sandhurst, especially for his advice on historical matters, to Colonel F. P. Preece, 1. BATTN, Command, Northampton and to Lt Colonel A. Cook, RAHC, Royal Artillery and College of Arms, London for their assistance in the early stages of the initial research and also for the use of the College of Arms.

Abstract

- [illegible]

APPOINTMENT IN GHANA

By John Lawrence-Gunn

Introduction

Ghana, formerly the British Colony of the Gold Coast, is situated on the Gulf of Guinea. It is bordered on the north by the Republic of Upper Volta, on the west by the Republic of Ivory Coast and the east by the Republic of Togo, and on the south by the sea. It extends about 334 miles along the coast line and inland to an average diameter of 468 miles. Although a tropical country, Ghana is cooler than many countries within similar latitudes. The total area is 57,800 square miles with a population of 7½ million.

The Gold Coast aspect of West Africa was first visited by European traders in the 15th century. The Gold Coast colony, Ashanti, the northern territories and Togo-Volta-Togoland, the constituent parts of the new state, came under British administration in various forms: the original Gold Coast Colony, the central and southern areas being first constituted in 1874, Ashanti in 1901 and the northern territories proclamation in 1902.

The territory of Togo-Volta-Togoland, part of Togo, a former German colony, was transferred to Britain by the League of Nations after the First World War.

The former Gold Coast colonies and associated territories became the independent State of Ghana and a member of the British Commonwealth in March 1947, adopting a Republican constitution on 1st July 1946. A referendum in January 1964 gave authority for creation of a new party State and authorized Dr. Nkrumah to dissolve Supreme Court and High Court judges at his discretion. On 24th February 1966, the Army seized power and the Nkrumah and his ministers were dismissed; the coup produced a period of some very considerable reform to the system.

There are four seaports in Ghana situated at Accra, Takoradi, Kumasi and Tema. Accra airport is an international one, and is the gateway for services from the U.K. The Northern Ashanti and Western Ashanti Togo harbours, Africa's largest artificial harbour and a prospective major port of the South Atlantic, was opened in 1962. There are twelve boats for larger ocean going vessels and an oil berth has also been built to serve the Ghanaian refinery which has been constructed in Tema. Accra is the capital and has a population of 300,000. It is 4,000 miles by air from Liverpool and takes 12-13 days.

Events of interest during the author's last six months

22nd October 1965. O.A.U. conference in Accra, which called on U.K. to accept the Rhodesian constitution in order and to not force if necessary.

26th October 1965. Mr Wilson met President Nkrumah in Accra.

21st November 1965. President Nkrumah stopped all military leave in Ghana and announced plans for mobilisation because of the Rhodesian situation.

1st December, 1965. Ghana severed diplomatic relations with U.K.

24th February 1966. While Dr Nkrumah was making a tour of Africa (1963) of Ghana's Army seized power: the President and the Dr Nkrumah and his ministers had been deposed. Parliament dissolved and the Convention People's Party abolished: nearly political detainees were released. The National Liberation Council took over government.

24th and 26th February 1966. Many former Ghanaian Ministers were arrested and detained and Mr Geoffrey Bag, Q.C. Advisor to President Nkrumah and former British Labour M.P. surrendered himself to the new authorities. On 24th March Bag was ordered to leave Ghana.

26th March 1966. Ghana resumed diplomatic relations with U.K.

The Job

My appointment to the British First Reserve Training Team in Ghana from October 1964 for twenty-one months marked the first occasion since the war that a Naval Medical Officer has served on the stretchy Gold Coast and one must admit to a feeling of some uncertainty as to what the job would be.

In the event, my arrival at the airport in Accra with its inevitable confusion and delay was hastened by the intense heat of Kofi de Nkrumah — the Wing Commander with whom I was to work for the next fourteen months — who casually remarked that there had been no supplies of malaria tablets in the Military Hospital for the past six months. Although that seemed a trifling worry at the time, it pointed into significance as after what has come to light, The Military Hospital in Accra at that time was plagued by doctors from Ghana, India, Pakistan, Yugoslavia, Poland, Russia, Canada and U.K. the patients were military personnel and families of all nations serving in Ghana, diplomats, politicians and many hundreds of people of influence treated by Nkrumah upon to free treatment, all male civilian orthopaedic cases and all male emergency accident cases. The average of general maintenance administered per month was about 750 which included 40 emergencies.

Two operating theatres were in use and I was most shyly assisted during nearly the whole of my stay by a Ghanaian nurse-matronage resident in Heligade. Mr W. F. R. Nkrumah. I noted a few points on arrival at the hospital such as the lack of malaria tablets of note time of petroleum and anaesthetics at any form of machine apparatus in the anaesthetics room and that the Boyle's machines had not been serviced since 1959. However, various trays were fixed to one corner above the anaesthetics and like the ones famous theatre in London, we were able to say that we never closed.

The high temperature and humidity were encountered most of the time in the operating theatre by our confining but the system was considered variable. We were also seated by a solution of varnished cushions from time to time and one evening, but quite an exciting heat after a large black oil which appeared under the operating table as I was giving a patient an injection of morphine. The oil was run to ground under the anaesthetics machine and the lamp to prove administered by an operating theatre team.

The medical officer in-charge of the surgery when a central line surgery and mechanical pump like machine runs into the operating room they were not covered by either clinical groups and outside help from the anaesthetists brought such their pumps and operating equipment was sought.

The type of cases for surgery were rather alarming by U.K. standards. Patients with huge pyrameteriomas of the胃 (Fig. 1), Islet's tumours, subcutaneous metastases requiring debridement and various congenital abnormalities kept the anaesthetist on his toes. Osteomyelitis, polymyositis, leprosy, tuberculosis and the results of wild cat accidents were common conditions. The S.S. system and laparotomy for neuroblastoma of the adrenal gland (Fig. 2) were especially early cases for anaesthesia.



Fig. 1. Huge pyrameterioma of the stomach.



Fig. 2. Neuroblastoma of adrenal gland of a child.

From now on the main supply of blood came to a halt and we achieved much success with transfusion as the very standard sutured arteries which frequently proved to be faulty procedures.

Apart from hospital work, I had been asked to start a medical branch in the Chinese Navy. It was a considerable uphill task and I sent the following comments that I made at the end of a report, which may be of interest.

"The Army in China has been long established and works on a highly trained system, one of the things I've enjoyed working. Being medically was purely working to the satisfaction of Generalissimo. However when work conditions were so unsatisfactory as to have been directly opposed between the concept and the execution.

The system of allowing medical staff to work independently, and not under the direct control of a higher medical command in China. They are established units. One of the main things noticed in going on by the Marine at the Military Hospital was continuously found to have been in front along private practice with a local working physician.

A lot of stress upon the maintenance with the business of Medical Services for the Chinese in China and their maintenance was possible in the Military Hospital. In such cases medical services to provide, to have been control in practice.

No private was possible for the treatment of a Naval Medical Branch, since the staff could not be working on medical services were obtained from the Navy Medical Branch.

However, in the end our plans came to fruition and I understand that it is still a viable service. In fact at the time of writing, an SBA from GHS (Korean) is doing a course in Haidar whilst the ship is undergoing refit at Portsmouth.

The Camp

On the morning of 24th February 1966, I was awakened at 0200 by the sound of rifle fire and this was quickly followed by a very loud and unpleasantly close explosion which blew in the window of our house. It was clearly time to get up and investigate.

A telephone call from Brigadier Dwyer-Snowfield, Commander R.I.S.T.T. informed me that a military camp was in progress and that all members of the main should remain at home and further orders. As this was obviously an exercise for the troops and immediate at the Military Hospital Squadron Leader Frank Kester and myself left for the hospital as an Army ambulance guarded by soldiers — a slightly alarming experience as there was much shooting in the streets at the time.

On arrival at the hospital at about 0600 casualties were already beginning to appear and there was an unpleasant amount of gunfire in the immediate vicinity, this mainly in the proximity of the President's palace and the barracks of the President's own guard post across the road.

The Commanding Officer of the hospital, Lt. Colonel Kesteven Tomlinson put me in the position to be the position as I was able to operate my bowler hat and continue wearing my Naval uniform, since the soldiers were mainly patrolling around the President's palace, who were strongly supported by Chinese and Russian vehicles. We operated on casualties throughout that day and the following night. Cases included wounds of the chest and abdomen, penetration of eye sockets of the forehead artery compound fractures, hand injuries and the like.

For the next few days casualties continued to be admitted with gunshot wounds requiring surgery. It was a busy time though most interesting and worthwhile.

DENTAL SURGERY AMONGST THE ABORIGINES OF NORTH MALAYA

By Noel Antonmough

General Information

The Aborigines or Orang Asli as they are called locally, are the original natives of Malaya. There now live in many hundreds of small kampongs dotted mainly in the North Western region of the Malayan jungle and are divided into 15 tribes each speaking its own dialect and having slightly different featured physical and social characteristics.

From the time of Government settlement through Thailand and Cambodia the Malayan Government had very little to do with the Orang Asli and indeed seemed to ignore their existence but it was soon discovered that the indifference shown caused the aborigines to go uneducated and to live within the medical-rubber kampong controls. Thus for a number years to that of Thant and Rukh, kampongs were being placed in North and East Thailand, the Department of Aborigines was formed. Under this department was founded the Gonglak Aborigine Hospital which has been built up and is now administered solely by Dr. Malcolm Bolton, an Englishman who came out to take up a one year post service years ago.

Gonglak is responsible for the medical care of 11,000 Orang Asli and to help Dr. Bolton do this he has a staff of two doctors, one dental surgeon, one training centre and approximately 10 trained male and female nurses. The latter are all Orang Asli and have been trained by Dr. Bolton himself after they had been selected and sent to the hospital by kampong headmen. When the male nurses have reached a certain standard in their training they are sent individually to run jungle posts in the larger kampongs keeping in contact with Gonglak by radio-sets.

Financially the hospital is supported to a very limited extent by the Department of Aborigines but nearly all drugs and equipment are provided by CARE medical and AIDS under the Colombo Plan. The doctors and half the nurses are CARE medicals the dentist and remaining nurses VSO.

The transport of such patients from the jungle is extremely difficult and very expensive this mostly being ensured by RNAF Alouette helicopters operating from Kuala Lumpur but also to a small extent by river and road. Thus it is essential for regular visits to be made by the medical staff to the kampongs actually in the jungle. The difficulties arising from this considering the staff patient ratio and transport problem speak for themselves.

Aims and Purposes of the Visit

Following the tour of the hospital by Captain Mallesh ICD HMS Portsmouth and Captain Robinson during Christmas 1966, Dr. Bolton suggested the assistance by a dental and dental surgeon from Portsmouth during the next maintenance period.

would be invaluable. They would be employed both in the jungle hospitals and in the hospital not only to treat the overwhelming local staff but to make their own exposures and, from the defence of Malaya point of view, to be a real asset.

This latter point did prove to be very true since without exception the patients treated were extremely grateful and eventually demonstrated their subsequent friendship in many diverse ways.

The First and Isolated Accident

The already interesting drive by Land Rover to Kuala Lumpur was somewhat obstructed by the heavy flooding around Inangut but despite — rather than because of — the unknowns given by dozens of local Malay boys, we eventually entered the capital. Fourteen miles further north, surrounded by deep jungle was Gembut, hospital which my assistant and myself reached by ambulance to be greeted on our arrival by a host of grinning naked children and their equally naked, but toothily grinning mothers.

Dr. Rogers, the Consulting No. 1 presided in, since Dr. Bolton was away in the jungle, as also was Mr. Hensley, the dental surgeon, and commenced a rapid tour of the hospital. There was basically composed of long wooden beds housing 20-24 beds with separate medical and post-natal wards, emergency treatment room, laboratory and dental surgery.

The wards were mostly steel close to the river, which separated the hospital from the surrounding jungle-covered hills and provided the main drainage with its and laundry facilities. We were advised against swimming in the river since there was another lagoon just two miles upstream.

Within minutes of being shown the circumstances, a small hut on the jungle slope overlooking the hospital on the other side of the river, an Orang Asli nurse approached and explained that my services were urgently required. Considering my complete ignorance of the language and of the type of tropical medicine practised in these areas it was with some suspicion that I followed the nurse down that jungle path.

However, the urgency proved to be an uncomplicated blood transfusion after which I decided to inspect my department, and upon arrival discovered a considerable queue of patients awaiting treatment.

I had very quickly become Dr. Orang Puan Diga Bura — an impressive sounding title which only means 'The new white tooth doctor'.

My very first patient proved to be a precursor to many I was subsequently to treat but the advent of such circumstances rather overwhelmed me. She was a young mother scarcely beyond losing her fifth child while the fourth lay deeply asphyxiated on her back. Despite an incredible variety of signs and pathological processes between myself and my Orang-Ali assistant, the child was definitely not to be delivered and the process turned herself in the chair mouth open and proceeded to suck the milking rubber. Once the appropriate rhythm had been attained between us delivery proceeded slowly but satisfactorily, having previously removed the obscuring patches of fetal fat.

The latest type of vegetable soup is used exclusively by the Orang Asli and apart from the swelling (apparently a gummy disease) a high percentage of the cool deaths from which these people suffer. It will be many years before they can be persuaded to discontinue the habit.

Work continued at the hospital for a further 3 days until Mr. Hensley's return from the jungle, my palagan Malay gradually improving and the prospects of an entirely happy and carefree concept of life growing on us. During this period the hospital faced a grave shortage of blood and a detachment of R14 Squadron came to the rescue by helicopter. The staff were very impressed indeed by this gesture—(It was donated on 11)—and subsequently the Squadron round the hospital usually entertaining and entertaining both Orang Asli adults and children alike. They daily returned to a depot by the local air valley hill and conscientiously started off my good work by feeding the delighted children packets of *Chia gale* (cereal).

Upon Mr. Hensley's return, a war erupted then I was dropped by R14 Sqn into a jungle clearing to work my way round a group of hamprings. This unfortunately this could not be achieved for 3 days. Communications between the Squadron and the hospital were extremely poor over the operation of a telephone net there, in the jungle making not only Moslem-Muslim meeting but the journey of both. Thus, over after many frustrating hours spent by Dr. Rossiter and the Senior Officers of R14 Sqn, 170 eventually arrived at Gombak to transport us to Kuching in a small hampring some 30 miles east of Ipoh. The people recognized by the pilot was reports and we arrived over the landing pad without a hitch, only to find the hampring apparently deserted.

As soon as the helicopter had disappeared over the nearby mountains east, and the misty outlines of the jungle stretched out, a sharpish hole child waiting for them, nearly popped out from between the bamboo slats of the narrow, window. We slowly walked up and down between the five bars which composed the first group, very slowly aware of the many pairs of eyes following our every movement. Eventually we saw a woman dropping three children from one of the bars and make off into the jungle. We sat, worried, smoked and waited.

After approximately one hour, as if by magic, there men appeared near us and we were convinced that one man was the Palagan (headman). He was in urgent need of treatment, and after getting over the main obstacle of persuading him that we were not Chinese, he seemed extremely grateful of them—a considerable amount of money was successfully completed. From that moment we were accompanied by at least 40 Orang Asli, ranging from the ages of 50 to 5. The pair of work became somewhat slack, if not slowly clinical and collected by the over requirements of one young native who overrode the native doctor and set fire to a pile of equipment. This incident caused great anxiety and I in fact was concerned a mile there just as for their entertainment.

Arrangements had been made for a helicopter to transport us the following day to some more accessible hamprings. This unfortunately, due to weather and the increasing programme of R14 this was impossible as a hospital ambulance drove us to Kuching. There we parked ourselves and all our equipment in a very narrow Aborigine camp to commence a 7 hour cramped journey through the jungle

by street. The houses were not a little amused to observe the look of astonishment on my face each time we headed our way up through the rising terraces of the jungle. Wild animal life was in abundance, notable observations being two quails and a wild boar. On arrival at Bham we were again treated with some surprise but this was a much larger hampong and within two days we had treated over 100 patients, many of whom came from surrounding hampongs in the great big boat. We slept on wooden boards raised above the floor on short bamboo-type legs to deter the rats from becoming too familiar but this, naturally, did nothing to deter the snakes and mosquitoes from rising to their point. Food was cooked by the Orang-Aus and composed largely of green rice (which puts all other forms well in the shade), jungle vegetables and fish. Everything, of course, was earned and the saying "Curry for breakfast, vegetable, lunch and dinner" indeed proved to be true, but perhaps this was a mixed blessing, since it considerably dulled my sense of smell.

A Swampy Police patrol passed in a rush and graciously reserved treatment prior to dropping us down there into the jungle. They were out in particularly high spirits, since 17 of their number had been killed two weeks previously during a clash with insurgents only 30 miles to the north — once again another pointer to the great importance of winning over the Orang-Aus.

We were about to make our departure on the morning of the 4th day — it hadn't stopped raining for one moment — when a distressed native came running from the jungle. One of our hampongs had been in danger since the previous night and was in difficulties. Striding and slipping along the grassy jungle track we reached the hampong, which was about a mile away, and clambered up onto the already overcrowded hut. The help was delivered but unfortunately not since the patient's condition was satisfactory. We left the hampong in return to Bham at a much slower pace and in a very wretched mood. It is an unfortunate fact in that the urgency of the problem of helping these people medically really becomes apparent.

Our return journey down the river from Bham, since the river was extremely swollen, was completed in half the time, even though we had two more passengers, who were patients we had decided must go back to Gondok. One of them is said very frightened girl who had never been out of the hampong before and the other a T.B. case. On the journey up the river we had passed under two bridges at least 12 feet high, going down we passed right over them without a trace, taking up above the water, such was the devastating extent of the flooding.

After a thorough inspection for broken and the resulting business of removing them, we proceeded to Gondok (which by that time we regarded as home) and we hoped a run of dry clothes.

A further day passed working amongst these very happy people and then the time came to leave, leaving Dr. Orang-Put, Gert-Bam and to return to the ship, a somewhat delighted Surgeon-Lieutenant.

Conclusion

Dr. Boudier has an extremely difficult job. He is constantly looking to obtain

adequate supplies, building, staff and transport and the only organisation which gave him any appreciable support is the Australian CARR mission in that when the Royal Navy arrived at Chinangay 1965 and again in February 1967 to help him he was extremely grateful. The work actually began on the boat during the 14 days period — having worked for Dr. Boulton and also having knowledge of the problems which F14 had to contend with — it became fairly obvious that an improved landing and transportation would benefit the people flying programme and offered appreciably increased assistance to this very worthwhile project.

It seems that the major problem associated with operating helicopters at that time and over that terrain in circumstances — a difficulty which led to the restriction on movement of single helicopters and resultant decrease in efficiency. However, throughout the Aborigine base, a network of H.F. transmitters set up by the radio officer at Gombak under Dr. Boulton's direction which if the helicopters used H.F. equipment which the people would learn to provide a built in safety system. Signals could be received from Gombak right up to the Thai border via the coast listening transceiver from which they could be relayed to the R.M.S.F. station Samjung.

Bank patients have to be brought many hundreds of miles to Gombak and when it was learnt that F14 were forbidden to do this except in dire emergency Dr. Boulton was bitterly disappointed. I attempted to explain the legal and political reasons for this legislation but as he pointed out, the Aborigine community on injury did mean as an R.M. (note) seemed legally exempt even if he worked in and his chemotherapy, as all that is required on any document of emergency.

Excluded as was at the time reason for the presence of the Royal Navy on the Far East and the no operation of the Aborigines, a vital if collaboration with Malaya is to be preserved. The main benefit to be gained by helping these people should not be lost by legalistic considerations.

The Western helicopter is the only means at Dr. Boulton's disposal of non-venomous bites of the people medical point for as badly needs and it would be a great shame if the Royal Navy on the Far East could not come to his aid.

I appreciate that as a closed country I am in no way entitled to capture opinions on matters which are not my immediate professional concern but since my visit to Northern Malaya was in some ways unique my observations might perhaps be considered relevant.

SUMMARY

As narrated is given of time spent in February and March 1967 with the Aborigines of Malaya in connection with the staff of the Department of Aborigines, Government of Malaya.

ACKNOWLEDGMENT

My thanks are due to Captain J. B. McLENNAN, DSO, DFC, DSC, RN for permission to publish a copy of this letter which is taken on my return from Northern Malaya.

HELICOPTER SURVIVAL EQUIPMENT TEST —ANTARCTICA

20th February to 23rd February, 1963

By John Martin

A *Lycabonum* (pilot) and Landing Airman, donated an extended experience, skills and equipped with Professor Scott's helicopter survival kit and related, unaccompanied by myself as an observer, landed in the Argentine Islands during a spell of sunny weather and wind speed of 0.2 Knots, with a view to testing helicopter survival equipment under antitoxic conditions.

Experiment

Neither man or machine had any previous experience of these conditions although they had gained considerable theoretical knowledge from the survival school.

Location

On landing their first task was to choose a suitable camp site bearing in mind prevalent wind direction and the possibility of avalanche, (only mark M 55 dugby and dig it into the snow). Lack of experience resulted in the taking 3 hours and 10 minutes, although weather conditions were perfect. The majority of work proved to be done within a few minutes on first hard snow and I had to brush them with a standard shovel.

As far as I could see there is no method of anchoring the dugby other than digging it in. On the slope where we landed there was a maximum of (approx) 10 ft of water beneath which was solid ice. There was therefore no sufficient depth to dig a snow hole and the wrong sort of snow to build a snow house. Under these snow conditions anchoring the dugby could be an important factor in the both winds prevalent in these areas. The possibility of carrying a light should be considered. A few minutes work in numerous rows indicated the necessity for adjoining shovels. They had to be reminded of this although it is a point covered adequately in all lectures.

Temperature and Position

The night of 20th/21st produced a maximum outside temperature of 22°F with a temperature inside Mark M 55 of 45°F. Both men were dressed in compression suits and wrapped in paraffin. Both complained of a very cold night during unassisted and were made inside by 0000. The major complaint was cold making them freeze externally. On Sunday the 21st the dugby were removed from the pit and the bottom of the pit lined with rocks and snow from the shore. In addition the two intermediate dugbys (M 54 & 56) were partitioned and moved upwind down inside the M 55. Unfortunately, at this stage another factor was noticed. Both men had complained that they could not keep their legs warm in compression suit boots without walking about so they decided to remove their suits at night.

As a result of packing men and suits under the duaghy, covering another layer of insulated duaghy in the main duaghy, and removing underwear suits plus a certain amount of contamination, both men spent a very comfortable night and did not wake up until 0800, feeling cheerful and less depressed than on the previous day. The last 24 hours is so important, not particularly in two possibly shocked people. Maximum temperature inside the pressurized sleeping bag was 90°F, inside suit temperature 35°F. The double insulation appeared to push the temperature up considerably. On Monday the third man described complained he had a cold as his nose was running. I assured him that he had not got a cold because I have noticed this phenomenon on other occasions. My nose dropped for a fortnight in the Arctic and then stopped. I think the nasal mucus takes some time to adhere to and reacts with the individual.

The last night Monday was accompanied by sleet and snow but both slept in comfort.

Notes

The morale of one member was good. The other complained incessantly but lost frequently towards the end of the trial. This could become trying in reality but nonetheless unless the other is a particularly strong character. It seems the in case of mental collapse for long flights in this area.

Food

The short duration of this trial precluded serious eating. One that eating or palatability and accompanying instructions.

After the first day, both members were unable to drink the main duaghy drink prepared as per instructions because they said it was too salty although on a full stomach it is pleasant. The ground issue on what to eat and what to eat as there as it might be and caused considerable adverse comment.

Equipment

- (a) A proper shovel is essential.
- (b) The instrument can be improved for cold climates possibly by creating a larger size with some sort of vents to get underneath like an shovel or a Norwegian army type tool.
- (c) Rubber is heavily cold and therefore wears without the instrument hole as might suffer unnecessarily after factors had been changed in this case.
- (d) The main tool, model for a useful addition to the equipment as it enables a hot drink to be stored when having up.
- (e) One can use only a pencil. Rubber from either from to carry or use the instrument. It can be extremely dangerous if not carried or used correctly.
- (f) A climbing rope is provided. If this was calculated for climbing and for it was have to use it or was there sufficient accessory climbing gear. One man for was unable to be a leader.

- (g) The design flaw and/or problem could possibly be solved by making shirts for these conditions — although special individual designs were ordered as a compromise. It may not always be possible to find suitable socks and shoes to provide a foundation. The alternative is to provide a suit and
- (h) The medical pack appeared to be comprehensive although I had no occasion to use it.
- (i) The equipment that went on the trip was not exposed to any wind, chill factor or low temperatures and was found satisfactory apart from the boots. Longer flights over Antarctica would certainly affect the problem from the equipment viewpoint.
- (j) No cross gaggles were provided in the narrow pack.
- (k) The food packs are designed for life on the working party envisaged and would probably last even as long as non-working conditions. With some minor modifications the equipment for short-term survival would appear to be adequate.
- (l) The marching compass provided had no battery attached. If dropped in deep snow it would be very difficult to recover.

General Comments on Antarctic Survival

I think this problem should be broken down in Antarctic conditions on the basis of operational requirements envisaged.

- (a) Short-term survival with which the parent company was concerned.
- (b) Long-term survival in relation to longer flights inland.

The equipment for (b) would be considerably more than for (a) and would be expected to have a weight factor of two to three times that of (a). It would be an endeavour to expect an autonomous unit to stand daily wear and tear under these conditions with no chance of a respite for more than a short period so that every clothing item, etc., would have to be allowed.

In my opinion the key to this problem is fuel, food and know-how in that order of precedence. Without fuel it is impossible to get a drink, without adequate food survival in these temperatures will be jeopardized without know-how ability to supplement (a) and (b) from natural resources is dangerously limited. I was told in Stanley that two men stranded with seven pounds of pemmican, a wolf-skinning bag and a few bars, some of equipment survived over a year in these latitudes.

The two major differences between the Arctic and Antarctic are that there is no fuel or food of any type inland in the latter. To survive in the Antarctic, one must depend upon the sun, where there are seals, penguins and fish. The real test is the ability for a well provided team and Melbourn and the latter was purely emergency fuel.

Equipment concerning how the Melbourn was utilized in a fuel produced, in the Falklands and in various bases a chain of — a Melbourn store — which was only relied by producing a pencil and paper and asking for a diagram. I did not succeed in finding anyone who knew what it looked like although everyone had heard of it. A Melbourn picture was therefore produced consisting of a power collection

and an empty Marshall tin with holes in apparently usable places, and this was taken on the survival exercise. However, on the other side of the island to that on which we landed was a B.S.A. campsite where the men had been so short of food that they were so short supply locally. I am told that they can be handled satisfactorily by a tin on the wire or, alternatively, killed down by walking behind the left trigger. Unfortunately lack of well processed either of these pieces of information being wanted. They are totally lost, and upon there was nothing with personal experience of either methods.

If the possibility of long-term survival arose following an air crash island, it would appear to be necessary to break one of the basic rules of not leaving the aircraft in order to get down to sea level to survive. This should be under taken with an adequate supply of food in hand, together with the maximum necessary equipment as discussed from before.

SUMMARY

- (1) Antares survival equipment and training should be based on two rules:
(a) Short Term, (b) Long Term.
- (2) The short term equipment provided was adequate apart from some minor defects.
- (3) The long term items are the most critical. If a person can be brought through this period, his chances of survival increase. In order to do so, all printed instructions should be detailed and specific.
- (4) If the need for long-term survival is ever likely to arise, there will have to be an increase in the scale of equipment provided and of the knowledge to be utilised.
- (5) The key to long-term survival at the Antares is: (a) Food, (b) Fuel, (c) Knowledge.
- (6) The Antares differs from the Arctic, in that neither are (a) and (b) available island. In this sense, although the basic elements of cold weather survival as applicable to the Arctic, are similar, the food and fuel problems may make it necessary to break some basic rules.

Acknowledgements

I wish to thank Sergeant Warrant Officer E. D. Caldwell CB DPM for permission to publish and the Editorial Committee for their kind assistance.

THE PENICILLINS WITH PARTICULAR REFERENCE TO A TRIAL OF PENAMICILLIN, A NEW ESTER

By John Hunter Smart

Introduction

The preparations of penicillin at present available can be conveniently divided into four main groups as follows:—

1. Benzylpenicillin (Penicillin G) which is available in various forms (powder or crystalline, parent and benzathine penicillin G). This group contains the most active and best tested preparations which are still for most purposes the best available. There are two main disadvantages: the first is inactivation by the enzymes penicillinases which is produced by penicillin resistant strains of staphylococci, and the second is a degree of intolerance by gastric acidity, so that at present, whilst doses close with lysozilyticidosis, oral dosage has to be relatively high.

2. Phenoxymethylpenicillin (Penicillin V) which like penicillin G is a naturally occurring compound. It is also inactivated by penicillinase, but it is not inactivated by gastric acidity. Although it is effectively absorbed after oral administration in a much lower dosage than would be necessary for penicillin G, there are certain disadvantages. It has been shown by Barber and Garrod (1963) that, in vitro it is less active and more highly protein bound than penicillin G.

In addition, some semi-synthetic derivatives have been developed which have properties similar to those of penicillin V. Phenoxymethylpenicillin (phenoxymethyl penicillin) and phenoxymethylpenicillin (phenoxymethyl penicillin) are examples. It has been shown by Barber and Wainwright (1962) (1964) that these derivatives have the same disadvantages as the natural penicillin V.

3. Other semi-synthetic derivatives have been developed which are relatively penicillinase resistant, unlike penicillin G or penicillin V. Some of these for instance, methicillin, are inactivated by gastric acidity and cannot be given orally. Others, such as cloxacillin, are acid resistant and can be given orally as well as parenterally. Although these preparations are highly effective against *Penicillin resistant staphylococci*, they are less effective than penicillin G against non-resistant organisms. Thus one should therefore be reserved for the treatment of *Penicillin resistant infections only*.

4. Lastly, a synthetic penicillin has been produced which has a much wider range of activity. Ampicillin is effective against many gram negative bacteria including *Salmonella*, *Shigella*, *E. coli*, *H. influenzae* and some protein species. It is acid resistant and can therefore be given orally, but it is not penicillinase resistant.

In summary, it would probably be true to say that penicillin G is the drug of choice for systemic use, except for cases of systemic infections where cloxacillin or methicillin would be indicated, or when the wider range of activity of ampicillin is required. So far as oral administration is concerned, the same would have been true but for the inactivation of penicillin G by gastric acidity.

Procaine penicillin is an oral resistant ester of penicillin G which has recently been developed. It can be given orally and absorbable in the same as penicillin G. It therefore has all the advantages of penicillin G without the disadvantages of its absorption by gastric acidity.

Procaine does not act on the whole, unhydrolyzed group and the former body does not possess a specific action capable of causing hydrolysis. Procaine is a double ester—unsymmetrical benzylpenicillinate—which is hydrolyzed by acids and not non-specific esterase which are widespread in mammals (Vollach and Rumpf, 1955). The double ester is therefore hydrolyzed gradually during absorption in the duodenum and splits into acid and the unstable monomer, which in turn is spontaneously hydrolyzed into penicillin G and formaldehyde (Lapierre, Haskelin, Cambridge and Hale, 1956).

Thus we have a preparation which is said to be acid resistant and also capable of being hydrolyzed into penicillin G, the most efficient of the penicillins.

Object

Procaine penicillin has already been proved to be as efficient as chemical and bacteriological grounds in the standard oral penicillin V (Mandel Procaine Penicillin Report Group, 1957). The object of this trial was to determine the optimum dosage by estimation of the serum levels of penicillin as well as by assessment of clinical and bacteriological response.

Methods

Procaine penicillin was administered to two groups of twenty-four and twenty patients respectively who were admitted residents to hospital for treatment of tubercle and disease between 1st March 1956 and 6th May 1956 and between 9th July 1956 and 19th August 1956 respectively. There was no admission apart from evidence of penicillin sensitive organisms. The routine treatment given in addition to anti-tubercle therapy did not vary to any significant degree and only two patients in the first group of twenty-four patients had to be withdrawn from the trial because they developed glomerular disease during the trial leaving 22 patients in the first group.

In every case a blood sample was taken for culture before treatment with procaine penicillin was started. Whenever bacteriological progress was noticed a further sample was taken on the 4th day after admission to the trial. Blood was taken for haematological and biochemical examination at predetermined intervals following the commencement of treatment. The penicillin was assayed using the Harvey tube cup method and the results were expressed in μ g/ml of serum.

In the first group of twenty-two patients the drug was administered in a dosage of 500 mgm b.i.d. (0600 and 1400) in a total of 10 g. Blood was obtained for examination exactly twelve hours after the first night dose. The second group of twenty patients was divided into two equal subgroups. The drug was administered to those in the first subgroup in a dosage of 250 mgm o.d. (0600, 1200, 1800) and blood was obtained for examination exactly six hours after the first night dose. In the second subgroup the drug was given in a dosage of 150 mgm o.d. (0600, 1200, 1800) and blood was obtained for examination exactly eight hours after the first night dose.

Each point was examined clinically on admission and again on the fifth day. The temperature was recorded four times daily and a lead from normal for twenty-four hours after which it was recorded once daily.

The age distribution in each group was approximately comparable (Table 3).

Results

(a) In each group bacterial conversion was satisfactory (Table 3). In the first group (500 mgm. 5 d.) all patients from whom a Group pyogenic (group A) was isolated produced a negative throat swab on the 5th day (4/2), but one of those from whom a Group pyogenic (not group A) was isolated produced a negative throat swab on the 5th day. In both other groups (500 mgm. 3 d. and 750 mgm. 5 daily) conversion from Group pyogenic positive to negative was achieved in every case.

(b) The mean duration of pyrexia after the first dose (Table 3) was nearly the same in the first two groups (58 and 76 hours respectively) but was considerably shorter in the third group (39 hours).

(c) The incidence of clinical signs (Table 4) was satisfactory in all three groups.

(d) The mean serum levels of penicillin G (Table 5) was found to be too low in the first group (0.817 μ unit), but in the other two groups was satisfactory (0.931 and 0.840 μ (all approximately). The latter difference is not significant.

TABLE 3
AGE DISTRIBUTION

AGE	500 mg. 5 d.	500 mg. 3 d.	750 mg. 5 daily
0-10	11	4	2
11-20	8	2	7
21-30	3	7	2
31-40	6	9	2
41-50	1	2	2
TOTAL	31	24	23

TABLE 2
BACTERIAL CONVERSION

	500 mg. i.d.		250 mg. i.d.		125 mg. 4 times	
DAY	1	2	1	2	1	2
Group Positive Group A	0	0	2	0	1	0
Group Positive (Not group A)	1	1	1	0	1	0
Negative	1	10	4	10	5	10
TOTAL	22	11	20	10	10	10

TABLE 3
DURATION OF PERIOD AFTER FIRST DOSE

Period	500 mg. i.d.	250 mg. i.d.	125 mg. 4 times
0 — 24	10	9	4
25 — 48	7	7	2
49 — 72	4	2	0
73 — 96	1	0	0
TOTAL	22	18	10
Other cases	104	102	111

TABLE 4
CLINICAL SCORES

	500 mg. b.i.d.		500 mg. i.d.s		500 mg. 3 hourly	
	1	2	1	2	1	2
Erythema score	21	4	24	0	4	0
Swelling	17	0	4	0	4	0
Adverse	50	1	10	0	20	0

TABLE 5
PITUITARY HORMONE LEVELS

	500 mg.	100 mg.	500 mg.
Hours after first dose	11	16	4
Level in ng/ml. blood	0.007	0.007	0.040

Discussion

The use of penicillin in a dosage of 500 mgm. eight hourly has already been favorably compared with penicillin V in a dosage of 500 mgm. six hourly (Stewart and Gange, 1964). It was concluded by these authors that penicillin was as effective clinically and bacteriologically as penicillin V in these dosages for the treatment of acute otitis media with effusion.

In this trial the efficacy of penicillin was confirmed in all three groups on bacteriological grounds. Although the numbers involved were too small for statistical analysis, it would appear from the effect on the duration of pyrexia that a dosage of 500 mgm. 3 hourly was clinically more effective than 500 mgm. b.i.d. or 500 mgm. i.d.s. However, the mean serum levels of penicillin G were found to be equally satisfactory in oral eight hourly, after the administration of a single dose of 500 mgm. of penicillin. The serum levels twelve hours after a single dose of 500 mgm. of penicillin were found to be satisfactorily low.

Although bacteriological activity would seem to be consistent with a dose of 500 mgm. b.d., it would appear from the estimation of the various levels of penicillin G that there is a rapid fall off between ten and twelve hours, after an initial dose of penicemulsion with an average of 500 mgm. It is therefore concluded that the drug should not be given to children less than every ten hours. A dosage of 500 mgm. penicemulsion every eight hours would seem to be indicated on both serological and clinical grounds.

Penicemulsion has been shown both in the and other trials to be a valuable new mode for the oral treatment of penicillin sensitive infections. There is little doubt that it is as effective as phenoxymethylpenicillin (penicillin V) and that this efficacy is maintained when the drug is given eight hourly compared with the six hourly regime recommended for penicillin V.

SUMMARY

The penicillins available at present are discussed with particular reference to oral administration. Penicemulsion, a double salt, is described and the results of a small clinical trial using the drug at various dosage schedules are recorded.

ACKNOWLEDGEMENTS

I wish to thank Captain Peter Adams, F. R. Rufford, QRP, for permission to publish these results. Dr Hugh L. Young for the supply of penicemulsion and Mr A. W. B. for assistance for the penicillin assays under R&M, it being the first.

REFERENCES

- Aspinwall, H. P. G., Harrison, A., Cunningham, G. W. and Jones, A. W. (1955). *Ann. J. Pharmacol.* **34**, 595.
Bastin, M. and Gosselin, L. P. (1955). *Antibiotics and Chemotherapy*, Lippincott.
Bastin, M. and Warrack, J. (1955). *Ann. Med.* **5**, 133 (1955) and 134.
Chernin, R. and Warrack, J. (1955). *Pharmacol.* **100**, 568.
Chernin, R. and Jones, J. (1955). *Ann. J. Clin. Pharm.* **10**, 307.
Jones, A. W. B. and Bastin, M. J. (1955). *J. Clin. Res.* **11**, 17.

The second group are the medical records where doctors, nurses and physio therapists, the management is different in hospitals with separate, state problems in state universities and with probably some variations depending on the type of medical school. Mostly these are already listed in some clinical laboratory publications.

The section on the medical aspects of computers is less flowing in style and rather hard to follow, having the fact or value as the emphasis and variation in an already-paired sentence, perhaps but it will serve as a readable and readable to anyone who is used to reading in a dry style, regardless of these machines.

One book is highly recommended and well kept, except a couple of pages in the early morning of the computer age. It is useful to emphasize the present and future importance of accurate recording of all data in an unprocessed form as possible. In the computer system which makes computers are not always helpful, useful and important. As the author states, you can't find a feeling and expect to get out a free mind. (1978).

1

1000

The signatories are of the following states which have concluded either an extradition treaty with the United States or a consular convention for the protection of their citizens:

1949-1950	1951-1952	1953-1954	1955-1956	1957-1958	1959-1960	1961-1962	1963-1964	1965-1966	1967-1968	1969-1970	1971-1972	1973-1974	1975-1976	1977-1978	1979-1980	1981-1982	1983-1984	1985-1986	1987-1988	1989-1990	1991-1992	1993-1994	1995-1996	1997-1998	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016	2017-2018	2019-2020	2021-2022	2023-2024	2025-2026	2027-2028	2029-2030	2031-2032	2033-2034	2035-2036	2037-2038	2039-2040	2041-2042	2043-2044	2045-2046	2047-2048	2049-2050	2051-2052	2053-2054	2055-2056	2057-2058	2059-2060	2061-2062	2063-2064	2065-2066	2067-2068	2069-2070	2071-2072	2073-2074	2075-2076	2077-2078	2079-2080	2081-2082	2083-2084	2085-2086	2087-2088	2089-2090	2091-2092	2093-2094	2095-2096	2097-2098	2099-2100	2101-2102	2103-2104	2105-2106	2107-2108	2109-2110	2111-2112	2113-2114	2115-2116	2117-2118	2119-2120	2121-2122	2123-2124	2125-2126	2127-2128	2129-2130	2131-2132	2133-2134	2135-2136	2137-2138	2139-2140	2141-2142	2143-2144	2145-2146	2147-2148	2149-2150	2151-2152	2153-2154	2155-2156	2157-2158	2159-2160	2161-2162	2163-2164	2165-2166	2167-2168	2169-2170	2171-2172	2173-2174	2175-2176	2177-2178	2179-2180	2181-2182	2183-2184	2185-2186	2187-2188	2189-2190	2191-2192	2193-2194	2195-2196	2197-2198	2199-2200	2201-2202	2203-2204	2205-2206	2207-2208	2209-2210	2211-2212	2213-2214	2215-2216	2217-2218	2219-2220	2221-2222	2223-2224	2225-2226	2227-2228	2229-2230	2231-2232	2233-2234	2235-2236	2237-2238	2239-2240	2241-2242	2243-2244	2245-2246	2247-2248	2249-2250	2251-2252	2253-2254	2255-2256	2257-2258	2259-2260	2261-2262	2263-2264	2265-2266	2267-2268	2269-2270	2271-2272	2273-2274	2275-2276	2277-2278	2279-2280	2281-2282	2283-2284	2285-2286	2287-2288	2289-2290	2291-2292	2293-2294	2295-2296	2297-2298	2299-2300	2301-2302	2303-2304	2305-2306	2307-2308	2309-2310	2311-2312	2313-2314	2315-2316	2317-2318	2319-2320	2321-2322	2323-2324	2325-2326	2327-2328	2329-2330	2331-2332	2333-2334	2335-2336	2337-2338	2339-2340	2341-2342	2343-2344	2345-2346	2347-2348	2349-2350	2351-2352	2353-2354	2355-2356	2357-2358	2359-2360	2361-2362	2363-2364	2365-2366	2367-2368	2369-2370	2371-2372	2373-2374	2375-2376	2377-2378	2379-2380	2381-2382	2383-2384	2385-2386	2387-2388	2389-2390	2391-2392	2393-2394	2395-2396	2397-2398	2399-2400	2401-2402	2403-2404	2405-2406	2407-2408	2409-2410	2411-2412	2413-2414	2415-2416	2417-2418	2419-2420	2421-2422	2423-2424	2425-2426	2427-2428	2429-2430	2431-2432	2433-2434	2435-2436	2437-2438	2439-2440	2441-2442	2443-2444	2445-2446	2447-2448	2449-2450	2451-2452	2453-2454	2455-2456	2457-2458	2459-2460	2461-2462	2463-2464	2465-2466	2467-2468	2469-2470	2471-2472	2473-2474	2475-2476	2477-2478	2479-2480	2481-2482	2483-2484	2485-2486	2487-2488	2489-2490	2491-2492	2493-
-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-------

<p>Angene, Hans Adolph (H/C) b. 1892, m. 1916, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620,</p>
--

1000

© 1998: When you see the 1 on Midweek, drop it to 0. This day is the age of 00 and is passed from one master of the ceremony of the Great Work.

the United States, Canada, and Mexico, as well as the United Kingdom, France, Germany, Italy, Japan, and the Soviet Union. The book is a comprehensive survey of the world's major religions and is written in a clear, concise, and accessible style. It is a valuable resource for students, scholars, and anyone interested in the study of religion.

[illegible]

During the war he served first as medic, and finally, as the liaison between the two companies involved, not only the 28th but also units in North Africa and Italy as well. He was in the Command that the world knew it more widely only because of the ... knowledge which continued after the war is so rare.

[illegible]

in 1989 to 91. Approved Deputy Director Counsel for David Spivak, the first left an unimpressive ranking of graduate and work experience, but a number of awards. He knows to call me and they know they are around, but, contrary to, in Washington, Washington, the Department is a Committee of the Most Important, State of the, Right in 1989 was a slight to all. He was as Director was submitted by the Department, but, and he really liked to call and tell him I was, as I believe was extremely obvious in this I was kind of nervous, but there was just some and this was the worst.

Early in 1988 he and his wife took a long car cruise, it is the Far East where they met many old friends and enjoyed the pleasure that the world is such an interesting big and young one, already, appears. However, they did not have much and their home was still a small room where old friends met.

The following information was obtained from the records of the court and the records of the court of appeals.

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

Neogene	Eocene	1	<i>C. trophicus</i>	—	Fig. 1 (Fig.)
Neogene	Lutetian	4	<i>C. trophicus</i>	—	Fig. 11 (Fig.)
Neogene	Lutetian	5	<i>C. trophicus</i>	—	Fig. 12 (Fig.)
Neogene	Lutetian	5	<i>C. trophicus</i>	—	Fig. 13 (Fig.)



Index

in order

Artemonides, H. B. Dental Surgery Amongst the Aborigines of North Malacca	101
Bacon, M. Hypotheses on the Treatment of Acute Rheumatism	75
CLARK, F. D. Biting in "Judo"	109
Clark, E. B. C. Dental Prosthetic Note for the Veterans Day Year Association	141
CLARK, S. The Prevention of Venereal Disease in the Royal Navy	141
CLARKSON, R. A. Anisophthya Occurring in Two Femurals	121
CLARKSON, D. B. Embryological Relations to the Use of an Fetal or Medium Abroad: a Fetal Relation (Hindu Relations)	97
HUMAN, R. G. Primary Gonorrhea: Diphtheria, associated with Syphilis	125
CLARKSON, R. G. (continued) Response to the Use of an Fetal or Medium Abroad: a Fetal Relation (Hindu Relations)	97
CLARKSON, M. C. H. Anisophthya Occurring in Two Femurals	121
CLARKSON, D. B. Appendicitis in Children	170
CLARKSON, A. J. Report of the Bacteriology and Pathology Following an Epidemic of Intestinal Gonorrhea in a Small Ship	125
CLARKSON, D. B. Populism: Follow up	121
CLARKSON, D. B. Aspects of Alcohol and Nervous Medicine	115
CLARKSON, K. J. Hysteria: General Epilepsy: Note - Report on	107
CLARKSON, J. G. A Bacteriology Epidemic in a Small Ship	75
CLARKSON, A. J. Study of Dental Polyps noted with Dental Gums Protrusion	115
CLARKSON, A. Immunological Problems of Grafting	125
CLARKSON, J. H. The Possibility with Bacterial Substrata in a Trial of Polymorphism - A New Study	111
CLARKSON, A. B. Future Research in Bacteriology	117
CLARKSON, L. F. D. Bacteriology: Follow up	121
CLARKSON, J. Conclusions of the History of Public Medicine	111

CONTENTS OF THE JOURNAL

Anemophily Occurring in <i>Leish. Paganorum</i>	29
Appointments in Ghana	373
Aspects of Alcohol and Service Medicine	135
Boxing of Jado?	139
Burns: Future Research in	54
Cardiovascular Response to the Use of an Exhaust Machine Aboard a Flot. Bufova, Minda Sabarwa	32
Dental Surgery Amongst the Aborigines of North Malaya	142
Dental Political Note for the Western Guyana Reporter	38
Dental Polps associated with Mixed Germ Periods: Variety of	43
Helicopter Survival Equipment Test: American	147
Hypothermia in the Treatment of Acute Burn Injury	75
Immunological Problems of Grafting	45
Letter to the Editor	48
Notes of the Service	56, 106 and 166
Procedures with Particular Reference to a Test of Parasitocides — a New Error: The	151
Papier Ulceration: Complications of the Surgery of	31
Primary Chlamydia Infection Associated with Triloma	33
Psychiatric Follow-up	89
Reviews	50, 96 and 171
Salmonella Epizootic in a Small Ship: A	79
Salmonella Enteritidis in a Small Ship: Report of the Bacteriological Findings Following an Epidemic of	85
The Royal Navy Medical Club Dinner 1967	96
Venereal Disease in the Royal Navy: The Prevention of	70

Notes

The Editor reserves medical officers to send occasional papers on professional subjects (not personal experience etc.) from officers and members of service to the Royal Medical Service will be welcomed from ships and establishments on home and foreign stations. Notices of births, marriages and deaths are inserted free of charge to subscribers.

All articles or communications published in the *Journal* on the Royal Naval Medical Service will become the property of the *Journal* with full copyright powers, unless the author declares, when sending, to the effect that he desires to reserve the copyright to himself.

The Harvard system should be employed for tabling alphabetical references; these references being arranged in alphabetical order of the author's name at the end of the contribution thus: Smith P. G. (1956) *et al.* see also under 122-51. On the first a reference to a publication should be used by giving the author and on brackets the date thus: Smith (1956) believed this to be due to an 'art' link of bone metabolism on the strategic fundamental of the service of the R.N. (Carlson 1956).

The *Journal* is published 3 times a year. 3 numbers comprise one volume.

Articles and communications may be sent to the Editor at any time. They should be clearly written, as far as possible typed and sent in duplicate to the Editor, RN Hospital, Haslar, Gosport, Hants.

Subscriptions

For RN and RNR medical and dental personnel on the active or reserve list, and for Candidates to the Royal Navy, the subscription is 15s. per annum (postage is included) payable on the January of each year. Single copies 5s.

For all others who are not in the above categories the subscription is 15s. per annum (postage included) or 5s. per single copy.

Cheques and postal orders should be crossed 'Payable Bank Ltd.' and made payable to the Editor, The *Journal* of the R.N. Medical Service.

The payment of subscriptions by banker's order is recommended as it relieves the subscriber of the necessity of forwarding a cheque each year and simplifies the keeping of accounts.

All applications for *Advertisements* to be made to

THE EDITOR

IN CHARGE OF THE ROYAL NAVAL MEDICAL SERVICE
RN HOSPITAL, HASLAR, GOSPORT, HANTS.







